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ABSTRACT

This guide was developed for two purposes: to enrich science and mathematics programs in schools and to encourage the professional growth of teachers of science and mathematics. A basic premise behind the development of this guide is that all students should have a variety of learning experiences, especially students in categorical programs such as Chapter 1, bilingual, migrant, and other compensatory education programs. These students should see that the study of science is not confined to the classroom but offers a way to investigate and understand the curious phenomena to be found in the every-day world. Similarly, mathematics is not only the scientist's primary tool but also a world of its own full of curious phenomena. This publication lists contests and fairs for individuals and teams; extracurricular opportunities for students in California; and professional recognition, awards, grants, professional growth and development programs, and affiliations for teachers in California. Details and recipients of the "Search for Excellence" in science and mathematics education are included. (CW)

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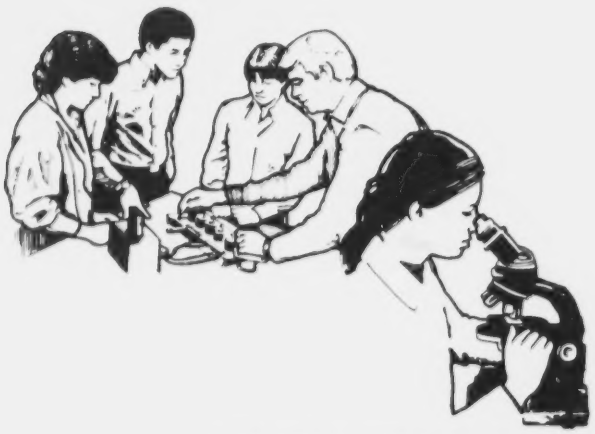

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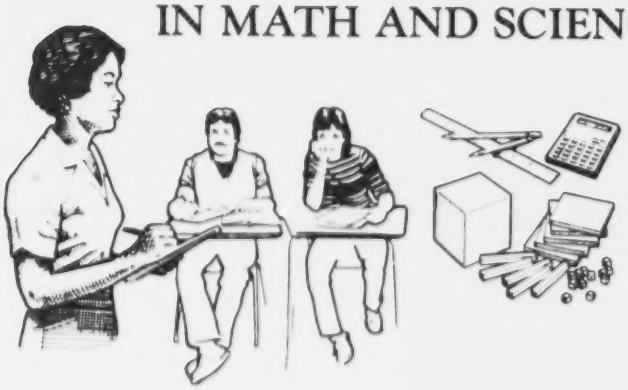
A RESOURCE FOR TEACHERS AND STUDENTS IN MATH AND SCIENCE



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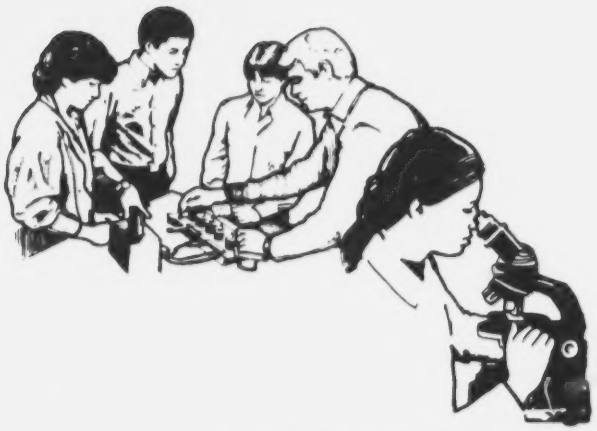

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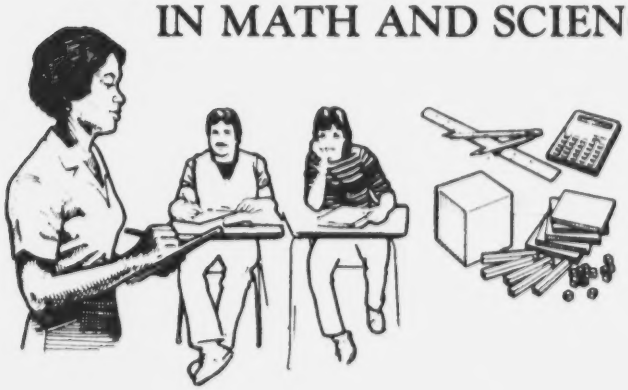

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A list of other publications available from the Department appears on page IV-44, or a complete list may be obtained by writing to the address given above or by calling Publications Sales: (916) 445-1260.

For inquiries regarding the contents of the *Enrichment Opportunities Guide*, contact the Mathematics and Science Education Unit, California State Department of Education, or call (916) 324-7190 (see the "Readers' Update Form" on page xii).

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Preface

The *Enrichment Opportunities Guide: A Resource for Teachers and Students in Math and Science* is a unique source of information about stimulating and interesting learning opportunities available to teachers and administrators in California schools. The activities and programs listed in the *Guide* are especially designed to enrich science and mathematics programs and to encourage professional growth.

The development and publication of this document have been supported by funds from Chapter 1 of the Education Consolidation and Improvement Act (ECIA). Naturally, the opportunities presented in the *Guide* are open to all students, classroom teachers, resource teachers, and teachers' aides; but students who have been historically underrepresented in science and mathematics programs are especially encouraged to take advantage of the opportunities cited in the *Guide*.

The future of our nation is at risk because of the singular lack of success we have had in teaching minority children, poor children, children requiring special assistance, and children from other sectors in which the population is growing. Unless timely intervention occurs in our schools, the loss to our nation and to the children individually may be irreparable. Yet, the schools alone cannot be expected to change the plight of these students.

Fortunately, many agencies and institutions other than the school can provide valuable support to the school program. They can provide the additional encouragement needed by some students in categorical programs, including Chapter 1, bilingual, migrant, American Indian, and other compensatory education programs. Often, the teachers of these students have little encouragement–or time–to seek out these types of valuable programs individually.

As professionals, teachers can provide excellent role models for their students by actively participating in the science education community themselves. In the *Guide* teachers will find numerous opportunities for their own professional growth as they share the excitement of science and mathematics with their students.

The *Guide* grew out of a single document, *The Science Student Enrichment Opportunities Guide*, published by the California State Department of Education in 1986. Supplies of this document were quickly depleted, and the teachers' need for information of this type prompted development of the present *Guide*. Suggestions for improving or expanding this document are welcome. You may use the "Readers' Update Form" on page xii or contact the Mathematics and Science Education Unit, California State Department of Education, 721 Capitol Mall (mailing address: P.O. Box 944272, Sacramento, CA 94244-2720); phone (916) 324-7190.

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Special thanks have been earned by the patient typist of the Mathematics and Science Education Unit:

Juliet Fines
Stenographer
Sacramento

NOTE: The roles and titles cited above were current when this document was developed.

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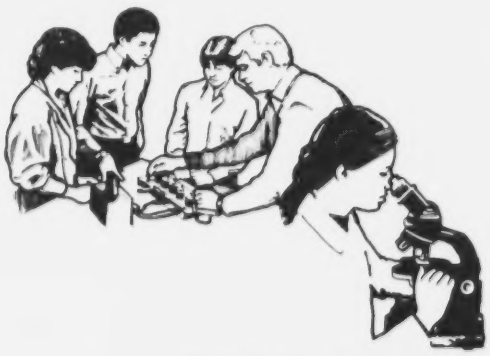

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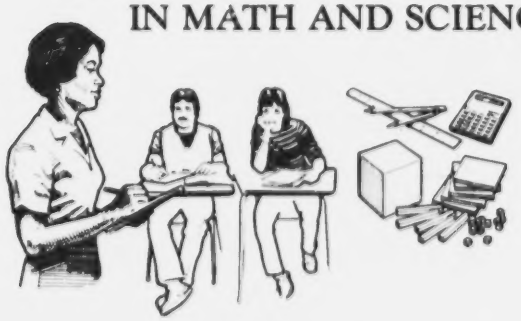
A RESOURCE FOR TEACHERS AND STUDENTS IN MATH AND SCIENCE



Introduction

The *Enrichment Opportunities Guide* was developed by the Mathematics and Science Education Unit for two purposes: to enrich science and mathematics programs in schools and to encourage the professional growth of teachers of science and mathematics. The *Guide* is designed to be revised regularly as new opportunities for participation in science and mathematics activities develop and become known. Because of this feature, the *Guide* has a secondary purpose: to assist program directors in getting their message out that their programs can make a difference. Indirectly, by increasing the participation in existing programs, the *Guide* may help develop a market for new and even better programs.

A basic premise behind the development of the *Guide* is that ALL students should have a variety of learning experiences, especially students in categorical programs—Chapter 1, bilingual, migrant, and other compensatory education programs. These students should see that the study of science is not confined to the classroom but offers a way to investigate and understand the curious phenomena we find in the world around us. Similarly, mathematics is not only the scientist's primary tool but also a world of its own full of curious phenomena.

Teachers of these students need a convenient and complete listing of interesting and stimulating programs and activities that are available to California students and educators. The *Guide* is meant to be a time-saving reference for teachers who believe that students learn best through active participation.

An Overview

The *Guide* consists of two parts: Science Enrichment Opportunities and Mathematics Enrichment Opportunities. Each part is divided into two sections: the first lists opportunities for students, and the second is for teachers. Each of the sections has a tabbed page for quick reference. The contents of each part are listed by page number at the beginning of the part following the tabbed page.

Each part is further divided into subsections which correspond to different types of activities and programs. Within each subsection the opportunities are listed in alphabetical order by their formal names.

The following criteria were used to select programs for the *Guide*:

1. Programs must be oriented toward science, mathematics, engineering, or technology.
2. Programs must show promise in furthering the excitement, creativity, and professionalism of science or mathematics.
3. Programs may be national, statewide, or regional in scope, but they must be available to educators in California.
4. Programs must have nonprofit status; private, commercial ventures are not included.

The information about the projects was current when this document was being prepared. The authors recommend checking with the project contacts before students, teachers, or others become involved.

Suggestions for Use of Students' Sections

Activities and programs listed in the **student sections** of the *Guide* are for individual students or teams of students who represent their school. For example, one program, INVENT AMERICA!, which appears on page I-6, is designed for K-8 students and offers excellent opportunities for teamwork and cooperative learning. INVENT AMERICA! encourages creativity and innovation through national competition, which is widely publicized in the news media. Teachers' guidance may be needed to draw attention to the scientific principles involved in the invention and to the mathematical skills that students can use to predict whether or not the proposed inventions will work and be practical.

Selection of students for teams should be flexible, and the strengths of individuals should be considered. Teachers may wish to explain to the team how each member has been selected to contribute a different strength. For example, the strength of one underachieving student in a Chapter 1 class might be the ability to devise creative solution strategies or to see the big picture. Each team member should see the value of the other members' contributions. Most of the activities and programs provide challenge and recognition for most students, including many who are not usually expected to excel.

While some of the activities may involve competition among students, they should understand that the important benefit to be derived from participation is not so much in winning as it is in playing the game well. Regardless of who wins or loses, the students who participate in these activities will increase their knowledge of science and mathematics; and they will develop positive attitudes toward these subjects, themselves, and school in general.

In reviewing these activities, readers should keep in mind the special problems of students they have in their schools. Some of the activities are more appropriate for students who are already highly motivated, and others may be helpful in stimulating the less motivated. A letter or telephone call to the contact person for information about an activity being considered for a group of students might be useful and timesaving.

The *Guide* should be reviewed regularly during staff meetings for instructional planning. Educators need to share successes that result from participating in extracurricular learning activities.

Suggestions for Use of Teachers' Sections

The **teachers' sections** of the *Guide* can be used by teachers and administrators to locate valuable statewide resources, to provide recognition for individual accomplishments in teaching, and, above all, to share the active interests of science and mathematics teachers throughout California.

Special recognition is given in the *Guide* to the state finalists in the Search for Excellence in Science Education and the Search for Excellence in Mathematics Education. Each of the listed schools has an outstanding science or mathematics program that may be used as a model. Information is provided to enable classroom and resource teachers, teachers' aides, and administrators to contact individuals who can answer questions about the programs and possibly send materials or arrange a site visit.

Other opportunities for sharing innovative teaching techniques are available through professional organizations for science and mathematics teachers at elementary and secondary levels. *The Guide* identifies contact persons for these organizations in the **teachers' sections**, and these individuals can also be valuable resources for sharing ideas professionally and for learning about other programs.

Users' Suggestions and Evaluation

The *Guide* was developed to help teachers by providing a unique type of resource. Because few documents try to accomplish the same purposes as the *Guide*, we need reactions and suggestions from the users to determine the *Guide*'s success. Here are some questions that should be answered:

- Is the *Guide* easy to use?
- Is the information accurate?
- Is the information organized conveniently?
- Does it get you involved?
- Do your students participate?
- Are the activities effective with some of the students, but not others? Which ones?
- Do the activities take more time than they are worth?
- Are the contact persons helpful to you? How are they helpful?
- What do you suggest to get teachers more interested in enrichment opportunities for their students and themselves?
- Do you know of other activities and programs that should be listed?

All comments and suggestions for improving or expanding this document are welcome and will be considered carefully. The "Readers' Update Form" (page xii) may be used to respond. (The address of the Mathematics and Science Education Unit is on the form.) Subsequent editions will expand the number and range of opportunities and will contain new information about the activities and programs as they change.

A Challenge

You can make a difference. Give the activities and programs in the *Guide* a chance; take some often-bypassed students who have been placed in a Chapter 1, migrant, bilingual, or American Indian education program for special instruction and involve them in some interesting learning activities. Then share your experiences with us as partners in getting students (and teachers, too!) excited about science and mathematics.

Readers' Update Form

Please advise us of corrections and suggestions for new activities you would like to see included in the next edition of the *Enrichment Opportunities Guide*. To recommend new activities, please provide complete information in each of the areas listed. Make copies of this form and use one for each activity. Use the reverse side of this page or additional sheets if you need more space.

Please check which sections of this *Guide* are affected by the changes you are suggesting on this sheet:

_____ Science Student Opportunities
_____ Science Teacher Opportunities
_____ Mathematics Student Opportunities
_____ Mathematics Teacher Opportunities

A New Activity:

Title of Activity:

Entry Deadline:

Who Is Eligible?

Program Description:

How to Enter:

Awards Given:

Sponsors:

Contact: (Name, address, and phone number)

* * * *

Please replace this sheet with divider labeled **Science Students**.

SCIENCE STUDENT ENRICHMENT OPPORTUNITIES

I. Science Student Enrichment Opportunities

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A. Science and Engineering Fairs

The process of researching, designing, investigating, building, and exhibiting a science fair project may be one of the most memorable events in a student's life. From classroom displays of projects to international exhibitions, science and engineering fairs play an important role in developing students' abilities to use the scientific method and to develop their unique creative abilities and critical thinking skills.

Title:	**California State Science Fair**
Entry Deadline:	Applications are due in mid-May. Registration and project setup, judging, and awards night are usually held in late May.
Who Is Eligible?	Students in grades 7-12 who are first-place, second-place, or third-place winners in county, regional, or district science and engineering fairs are eligible to compete at the California State Science Fair.
Program Description:	Projects are divided into 13 categories: behavioral and social sciences, biochemistry, botany, chemistry, computers, earth and space science, engineering, energy and environment, mathematics, health and medicine, microbiology, physics, and zoology.
How to Enter:	Contact the California State Science Fair Coordinator at the California Museum of Science and Industry.
Awards Given:	Medals and cash prizes will be awarded in the 13 categories. Twelfth grade students whose marine science investigations qualify them for the California Science Fair will compete for the $10,000 John D. Isaacs Memorial Scholarship awarded annually by the California Sea Grant Colleges Program.
Sponsor:	The California Museum of Science and Industry Advisory Board sponsors the fair.
Contact:	Sandra Burton, Manager of Education Services California Museum of Science and Industry 700 State Drive, Exposition Park Los Angeles, CA 90037 (213) 744-7437

Title:	**International Science and Engineering Fair**
Entry Deadline:	The International Fair usually takes place in May.
Who Is Eligible?	Sweepstakes winners, who are in grades 9-12 and from state, regional, or national fairs affiliated with the International Science and Engineering Fair, may apply.
Program Description:	This science and engineering fair is for sweepstakes award winners from regional or state fairs throughout the United States and many foreign countries. Staff from state and regional fairs will notify the International Science and Engineering Fair of the two top student projects.
How to Enter:	Enter a regional science and engineering fair affiliated with the International Science and Engineering Fair.
Awards Given:	Awards will include international recognition, certificates, medals, ribbons, monetary awards, and science equipment. International trips, equipment, and monetary awards will also be presented by such organizations as NASA; the U.S. Navy, Air Force, and Army; American Medical Association; and more than 50 other organizations. College scholarships and summer jobs frequently result from students' participation in this fair. The opportunity to meet famous scientists and become acquainted with science students from other states and countries is one of the most meaningful experiences enjoyed by participants.
Sponsor:	Science Service, Inc., sponsors the fair.
Contact:	Dorothy Schriver Science Service, Inc. 1719 N Street, N.W. Washington, DC 20036 (202) 785-3883

Title: **Regional Science and Engineering Fairs**

Entry Deadline: Entries for the fairs are generally accepted from January through March.

Program Description: Science fairs provide an opportunity like no other learning activity to stimulate interest in learning science. Some students who lack interest in reading about science or working with structured laboratory experiences respond positively to the study of science when they become involved in science fair projects. Students of all ability levels are rewarded by the sense of accomplishment that comes with a completed fair project.

The science fair program begins with a local school science fair, which requires a little planning time and imagination. Most of the work is done by the students themselves and by volunteers who set up the fair and judge the projects. For specific information contact the closest coordinator of a Regional Science and Engineering Fair listed below.

Contacts: The following are the coordinators for each of the Regional Science and Engineering Fairs:

Alhambra:
Alhambra Science and Engineering Expo
Duane Nichols
Alhambra High School
101 S. 2nd Street
Alhambra, CA 91801
(818) 308-2721 (mornings)

Chico:
California Central Valleys Science and Engineering Fair
Portia Tanaka
Sacramento Bee Educational Services
P. O. Box 15779
Sacramento, CA 95852
(916) 321-1786

Fresno:
California Central Valleys Science and Engineering Fair
Garland Johnson
Fresno Unified School District
Tulare and M Streets
Fresno, CA 93721
(209) 441-3741

Humboldt:
Humboldt County Science Fair
Cheryl Ingham
Office of the Humboldt County Superintendent of Schools
901 Myrtle
Eureka, CA 95501
(707) 445-7078

Los Angeles:	Los Angeles County Science and Engineering Fair Office of Los Angeles County Superintendent of Schools 9300 E. Imperial Highway Downey, CA 90242 Arie Korporaal, (213) 922-6357 Gerald Garner, (818) 997-2574 Fr. Lawrence Caruso, (213) 251-3300, Ext. 323
Mendocino:	Mendocino County Science Fair Duane Kimbrow or Ray Nelson Office of the Mendocino County Superintendent of Schools 2240 Eastside Road Ukiah, CA 95482 (707) 463-4804
Modesto:	California Central Valleys Science and Engineering Fair Sam Gonzalez The Modesto Bee P. O. Box 3928 Modesto, CA 95352 (209) 578-2073
Monterey:	Monterey County Science and Engineering Fair Kathy McElroy 241 Via Paraiso Monterey, CA 93940 (408) 372-1250
Orange County:	Orange County Science and Engineering Fair Biology Department California State University Fullerton, CA 92634 Stan Cowen, (714) 530-9293 Dave Walkington, (714) 773-3579
Riverside and San Bernardino:	Inland Science and Engineering Fair Norwood Hazard Office of the Riverside County Superintendent of Schools 3939 13th Street, P. O. Box 868 Riverside, CA 92502 (714) 369-6453
Sacramento:	California Central Valleys Science and Engineering Fair Portia Tanaka Sacramento Bee Educational Services P. O. Box 15779 Sacramento, CA 95852 (916) 321-1786

San Diego:	Greater San Diego Science and Engineering Fair, Inc. King Durkee or Lynn Williams Educational Services Division, Copley Newspapers P. O. Box 1530 La Jolla, CA 92038 (619) 454-0411
San Francisco:	San Francisco Bay Area Science Fair Theodore W. Beck or Robert Rice Lawrence Hall of Science University of California Berkeley, CA 94720 (415) 642-4156
San Jose:	Santa Clara Valley Science and Engineering Fair Fair Manager P. O. Box 307 Los Altos, CA 94023-0307 (408) 736-6616
Ventura:	Ventura County Science Fair Cliff Rodrigues Office of the Ventura County Superintendent of Schools 570 Airport Way Camarillo, CA 93010 (805) 388-4410
California:	California State Science Fair California Museum of Science and Industry 700 State Drive Los Angeles, CA 90037 Hal Robertson, Coordinator, (818) 997-2574 Sandra J. Burton, Manager of Education Services, (213) 744-7437 Eugene Harrison, Science Curator, (213) 744-7431

B. Team Activities

Team events provide an opportunity for students to cultivate and improve their interpersonal skills. Cooperative interaction with others is vital in communicating ideas. No team ever fails when team spirit and cooperation are fully realized.

Students discover that strengths within the team can be built on and that weaknesses can be recognized and overcome. The process of developing an esprit de corps may prove in the long run to be more important to the students than the resulting score or ranking.

Title:	**INVENT AMERICA! Program**
Entry Deadline:	April 15 is the deadline for submitting inventions to The U.S. Patent Model Foundation office in Washington, D.C., listed below.
Who Is Eligible?	All K-8 students in public and private elementary schools are eligible, and sponsoring teachers are eligible for special recognition awards.
Program Description:	INVENT AMERICA! encourages creativity and innovation through a national invention competition program. Inventions are judged on creativity and usefulness. Students learn to recognize, analyze, and solve problems. Regardless of capabilities or interests, students can participate and develop their own unique ideas.
How to Enter:	Entries are by school. Schools will receive entry materials in November. At least one classroom must be involved. For a list of the local resource and workshop leaders in your area, contact Zack Taylor at the address given below.
Awards Given:	State, regional, and national competitions determine student winners. Awards include U. S. Savings Bonds, ranging from $200 to $1,000; grants of $250 to $1,500 to teachers for special recognition; grants of $500 to $2,250 to schools; and other grants to outstanding state programs. Local school awards may be provided by service organizations and local businesses. A similar awards system is expected to continue for future competitions.
Sponsors:	The U.S. Patent Model Foundation and over 300 American corporations serve as sponsors.
Contacts:	Kathy Comfort Office of the Shasta County Superintendent of Schools 1644 Magnolia Avenue Redding, CA 96001 (916) 244-4600, Ext. 254 Zack Taylor, Consultant Mathematics and Science Education Unit California State Department of Education 721 Capitol Mall Mailing address: P. O. Box 944272 Sacramento, CA 94244-2720 (916) 324-7189 The U.S. Patent Model Foundation 1331 Pennsylvania Ave., NW, #903 Washington, DC 20004 (202) 737-1836

Title:	**JETS' TEAMS Competition**
Entry Deadline:	JETS' competitions are usually held in February and March. For applicants to be eligible for national awards, application by the local, regional, or state sponsor must be made by early January.
Who Is Eligible?	JETS' members in grades 9-12 are eligible.
Cost:	The JETS' annual membership fee of $8 per student includes two tests and entitles students to receive the newsletter, *JETS' Report*.
Program Description:	The JETS (Junior Engineering Technical Society Tests of Engineering Aptitude, Mathematics, and Science) program is designed to encourage interest in engineering, technology, and science through competitions. Academic tests are given to teams of students representing their schools or clubs. Areas tested are biology, mathematics, engineering, graphics, chemistry, physics, English, and computer fundamentals. A JETS' TEAMS competition may cover a local, regional, or state area. Any nonprofit institution, organization, or school may sponsor this competition. There are two team categories, based on school enrollment: large school division, 700 students or more; and small school division, less than 700 students. A student may have only two test scores count per team score. Winning scores are sent to JETS for national ranking. Scores must be sent for review by early April. Generally, the national test is given in mid-April. Contact the state coordinator for details.
How to Enter:	For information, write or call the contact person listed below.
Awards Given:	Recognition is given to students in individual subject areas and to the school teams with the highest aggregate scores. Trophies, plaques, medallions, and certificates may be ordered from the JETS' national office.
Sponsors:	JETS, Inc., and local organizations sponsor this activity. JETS is endorsed by the National Council of Teachers of Mathematics and the National Association of Secondary School Principals. JETS has been commended by the American Association for the Advancement of Science and is encouraged by the Engineering Deans Council. Competitions are generally sponsored locally by universities or colleges and the California Society of Professional Engineers.
Contact:	Anne Gymer, JETS State Coordinator Office of the Madera County Superintendent of Schools 28123 Avenue 14 Madera, CA 93638 (209) 673-6051, Ext. 260

Title:	**MESA Day Competitions**
Entry Deadline:	The date is announced by individual MESA Centers.
Who Is Eligible?	Members of MESA are eligible for the MESA Day competitions. MESA membership in the precollege program is open to students from grades 7-12 who have an aptitude and interest in mathematics and science and who are from underrepresented ethnic groups. College students may continue in MESA through the MESA Minority Engineering Program.
Program Description:	MESA is an academic support and enrichment program operated within the public schools and supported by the University and College Opportunities Unit, California State Department of Education, major corporations, and universities. Regional MESA programs are administered on 16 university campuses in California, involving 16,000 students and adult volunteers. Annual regional MESA Days in northern and southern California feature mathematics, engineering, and science competitions.
Awards Given:	The award may vary, depending on the MESA Center or type of competition.
Sponsors:	Mathematics, Engineering, and Science Achievement (MESA) statewide office; local and statewide industry supporters; and hosting college campuses serve as sponsors.
Contacts:	The school's MESA adviser or Fred Easter, State Director MESA Lawrence Hall of Science University of California Berkeley, CA 94720 (415) 642-5064

Title:	**National Science League**
Entry Deadline:	Schools must enroll by mid-October.
Who Is Eligible?	Middle school or junior high school students enrolled in earth science, physical science, life science, or triscience (earth, physical, and life) are eligible. High school students enrolled in first or second year physics, chemistry, or biology are eligible.
Program Description:	The sponsoring teacher administers the test on five dates during the school year. The team score for each area (division) is the sum of the five highest scores for a school. Scores are sent to the National Science League for national ranking and, after each contest, are reported in a newsletter.
Awards Given:	Each school receives two ribbons for the top two students in each division. The nationally top-ranked students receive rosette ribbons; top-ranking schools receive engraved plaques.
Cost:	A fee of $35 per division is charged.
Sponsor:	The National Science League works with local school sponsors.
Contact:	National Science League P. O. Box 9700 Coral Springs, FL 33075 (305) 344-8980 or (305) 527-6411

Title:	**Odyssey of the Mind**
Entry Deadline:	To be eligible for competition in California, a school must have submitted its membership to the International Odyssey of the Mind Association by December 31.
Who Is Eligible?	Any K-12 student in a member school is eligible. Students fall in one of the following divisions: Division I: K-Grade 5 Division II: Grades 6, 7, and 8 Division III: Grades 9-12
Cost:	A school membership costs $90; an unlimited number of students may participate at each school. Other costs would be for transportation to and from competitions.
Program Description:	Odyssey of the Mind (OM) is a team competition in which divergent thinking is rewarded, and brainstorming and problem solving are encouraged. Long-term as well as spontaneous problems are posed. Points are awarded for total team effort in creativity, style, and elaboration of the solution. Students in all grades may participate in problem-solving competition, and students in levels K-2 have the option of participating in non-competitive problem solving. Two of the problems are nonverbal to eliminate language barriers.
How to Enter:	Contact the OM Association for membership; contact the state directors for information regarding the committee member for your region.
Locations:	The competition among schools generally begins at the local level. There are nine regional finals in California, a California state competition, and national finals.
Sponsors:	In California OM is endorsed by the California Science Teachers Association and the California Association for the Gifted and is sponsored by the Fresno Unified School District.
Contacts:	California competitions: Brad and Hari Ellen Huff State Directors 1637 W. Morris Fresno, CA 93711 (209) 438-1260 OM memberships: OM Association P. O. Box 27 Glassboro, NJ 08028

Title:	**Physics Day at Great America**
Entry Deadline:	Physics Day at Great America is usually held on a weekday in May. A preliminary postcard mailing is sent in late November to schools in northern California (from Fresno north). A second mailing with registration information is sent in February. Teachers who register early (usually by April 15) will be invited to attend an orientation three weeks before the event. Early registration is recommended to allow time enough to receive materials.
Who Is Eligible?	Middle school or junior high school and high school students are eligible. Elementary school science teachers who are interested and willing to adapt materials are welcome to participate and bring their students.
Program Description:	During Physics Day, students make observations and take measurements on rides and use these data to solve problems. From the teacher's packet, the teacher determines which problems his or her class will solve, what follow-up activities will be done, and whether class credit will be given. The teacher's packet materials may need modification for use with physical science students. A guest speaker, possibly an engineer who designed one of the rides, makes a presentation.
How to Enter:	Teachers or schools send their registration materials to Great America at the address listed below. Because space is limited, applicants need to register early.
Sponsor:	Great America in Santa Clara sponsors this event. On Physics Day the park will be open exclusively to participants.
Contacts:	For registration and materials: Rosemary Prawdzik Group Sales Office Great America, Physics Day P. O. Box 1776 Santa Clara, CA 95052 (408) 988-1776 For information about activities: Don Rathjen Foothill High School 4375 Foothill Road Pleasanton, CA 94566 (415) 462-1615, Ext. 17 (415) 846-4005 (home)

Title:	**Physics Students' Day at 6 Flags/Magic Mountain**
Entry Deadline:	Registration information should be returned by the end of February.
Who Is Eligible?	High school physics students and prospective physics students may apply.
Program Description:	During the annual Physics Students' Day at 6 Flags/Magic Mountain, students make observations and take measurements on the rides and use these data to solve problems. Students may also participate in five Physics Olympics events.
How to Enter:	In early January information will be sent to all public and private high schools in southern California (from Fresno south). Physics Students' Day is held on a Sunday in March.
Awards Given:	Individual and team awards will be given to winners of the Physics Olympics events.
Sponsor:	6 Flags/Magic Mountain, Valencia, California, serves as sponsor.
Contacts:	John McGehee Rolling Hills High School 27118 Silver Spur Road Rolling Hills Estates, CA 90274 (213) 377-0158 (Call from 2 to 4 p.m. on school days) Andrea Bishop Special Events Coordinator 6 Flags/Magic Mountain Valencia, CA 91355 (805) 255-4806

Title: **President's Environmental Youth Awards**

Entry Deadline: Local project sponsors must enroll their project by the end of August.

Who Is Eligible? Individuals or groups of young people in levels K-12 who participate in environmental protection activities may apply.

Program Description: The President's Environmental Youth Awards (PEYA) program is being expanded to recognize the most outstanding award winners from each of the ten regions of the Environmental Protection Agency (EPA). The projects which are submitted reflect the extent of scholastic involvement in environmental protection efforts, as well as the diversity of the environmental field itself. The projects may be exploratory, intended primarily as learning experiences; or they may be work oriented, aimed at accomplishing specific environmental tasks within the community. School and youth groups submit applications for one of the following project areas:

1. Activity projects, such as litter or river cleanup campaigns and adopt-a-beach or adopt-a-wetlands programs

2. Demonstration projects, such as science fair exhibits, displays at fairs, scientific experiments, a series of demonstrations or talks before other groups, and other public awareness efforts

Separate awards will not be given for demonstration and activity projects.

How to Enter: Contact the EPA regional office listed below for application procedures and judging criteria.

Awards Given: Winners will be recognized for their accomplishments at the local, regional, and national levels. Regional awards are presented to both the junior division winner (K-6) and the senior division winner (7-12). One of these winners will be selected for the national awards ceremony in Washington, D.C., and will receive an expense-paid trip to attend.

Sponsors: Local project sponsors enroll the project with the EPA Regional Office. The local sponsor has responsibilities for the evaluation and awarding of projects. Call or write for details.

Contact: President's Environmental Youth Awards
EPA Region 9
215 Fremont Street
San Francisco, CA 94105
(415) 974-7765

C. Individual Student Programs and Contests

Many opportunities are available for students who enjoy competition, which can enable them to improve their skills and prepare them to give their best. Students who participate in individual contests and programs will increase their knowledge of scientific concepts; and they will develop positive attitudes toward science, themselves, and school in general.

Title:	**American Association of Physics Teachers Competitive High School Physics Examination**
Entry Deadline:	In March information is sent to physics instructors at high schools throughout California. The examination is usually held on a Saturday in late April.
Who Is Eligible?	Physics students in California high schools may compete in the examination.
Program Description:	The AAPT Competitive High School Physics Examination is a contest based on a comprehensive multiple-choice examination which covers general, noncalculus physics. Students may take the examination at one of approximately 25 sites around the state.
How to Enter:	Teachers register their students through the teacher's announcement of the examination. For further details, contact the person listed below.
Awards Given:	Modest cash prizes and certificates from AAPT are awarded to winners. Certain modest scholarships may be awarded by various colleges to top students.
Sponsors:	The southern California Section of the AAPT administers the examination; both the northern and southern California sections sponsor the competition.
Cost:	There is a $2 charge for registration to cover administrative expenses.
Contact:	Walter Ogier Department of Physics and Astronomy Pomona College Claremont, CA 91711 (714) 621-8000, Ext. 2945

Title:	**The Art of Science: An Art Competition**
Entry Deadline:	Students must return the entry form by mid-December.
Who Is Eligible?	Students in grades 11 and 12 may apply.
Program Description:	Young artists are given the opportunity to merge themes from science and technology with their art. This competition is part of National Science and Technology Week, which typically occurs at the end of April.
How to Enter:	Send for the entry form and rules at the address listed below.
Awards Given:	Thirty-five winners will receive official National Science and Technology Week "The Art of Science" certificates of merit. Their work will be exhibited during National Science and Technology Week at the New York Academy of Sciences Gallery, and it will go on a nationwide tour throughout the following year. The first-place winner will receive a $1,000 prize.
Sponsors:	The New York Academy of Sciences and the National Science Foundation serve as sponsors.
Contact:	Joelle Burrows, Competition Coordinator "The Art of Science" Contest The New York Academy of Sciences 2 East 63rd Street New York, NY 10021 (212) 838-0230

Title:	**Bausch and Lomb Science Award**
Entry Deadline:	The deadline for entering this program is mid-January. The national competition is in April.
Who Is Eligible?	Any high school senior who will graduate with three years of study in high school science is eligible to participate.
Program Description:	This program honors the outstanding senior-year science student in each American high school.
How to Enter:	Selection is made by each school's science department staff and principal according to criteria provided by the sponsor. The winners' names must be sent to the address listed below.
Awards Given:	Bronze medals will be given to school winners, and three four-year scholarships (valued at $4,000 to $8,480) will be awarded to national winners. School winners are automatically considered for admission to the University of Rochester and may be offered scholarships by that institution.
Sponsor:	Bausch and Lomb Optical Company sponsors the program.
Contact:	Bausch and Lomb Optical Company 1400 N. Goodman Street Rochester, NY 14609

Title:	**Duracell Scholarship Competition**
Entry Deadline:	The entry deadline is typically at the beginning of February.
Who Is Eligible?	Students in grades 9-12 may apply.
Program Description:	In this contest students create and build working devices powered by one or more Duracell batteries.
How to Enter:	The following is required for each entry: 1. Create and build a device following the official guidelines for the contest. (Guidelines may be obtained by writing to the address given below.) 2. Photograph the device. 3. Write a one-page description of the device. 4. Mail the description, photograph(s), and official entry to the address listed below.
Awards Given:	A total of $32,500 in scholarships and prizes will be awarded: one $10,000 scholarship; five $3,000 scholarships; ten $500 scholarships; and 25 $100 prizes. Prizes for the winners' teachers have included personal computers; portable lap-top computers; and $50 certificates for National Science Teachers Association (NSTA) publications. Free "Duracell Designer" T-shirts will be presented to all entrants.
Sponsor:	Duracell, Inc., sponsors the event.
Contact:	Duracell Scholarship Competition NSTA 1742 Connecticut Avenue, NW Washington, DC 20009 (202) 328-5800

Title:	**Edison/McGraw Scholarship Program**
Entry Deadline:	Entries must be postmarked no later than December 1.
Who Is Eligible?	Students in grades 9-12 may apply.
Program Description:	This program recognizes the inventive talents of high school students. Twelve scholarships are awarded to students who best demonstrate the inventive genius of both Thomas Edison and Max McGraw.
How to Enter:	Submit the following: 1. A proposal, which may be an abstract of an already completed experiment or a project idea that deals with a practical application in science and/or engineering. The proposal should be typed, using standard English, on 8 1/2-by-11-inch paper and should not exceed 1,000 words or five typewritten pages. 2. A letter of recommendation from the teacher/sponsor which indicates how you exemplify the creativity and ingenuity of Thomas Edison and Max McGraw. The letter should not exceed two typed pages. The proposal and recommendation must be postmarked no later than December 1. The entry should be mailed to the address given below.
Awards Given:	Awards totaling $20,000 will be given to 12 finalists. Ten finalists will receive $1,000 scholarships. Two grand award scholars will each receive a $5,000 scholarship at the time of their graduation from high school and will also be the guests of the General Electric Company at an Edison International Birthday Symposium. These symposia are often held in foreign countries. The teachers/sponsors of the two awardees will receive trips to the National Science Teachers Association national convention.
Sponsors:	The Thomas Alva Edison Foundation and the Max McGraw Foundation cosponsor the scholarship program, which is coordinated by the National Science Supervisors Association (NSSA) and Council of State Science Supervisors (CSSO).
Contact:	Edison/McGraw Scholarship Program c/o Robert A. Dean P. O. Box 2800 San Diego, CA 92038-2800

Title:	**Ernest O. Lawrence Nobel Travel Award**
Entry Deadline:	Students who qualify will be contacted by the Lawrence Hall of Science in late April or early May.
Who Is Eligible?	Students may apply who are going to the International Science and Engineering Fair and who are California winners of any of the following competitions: ° Junior Science and Humanities Symposium (top five students from northern and southern California) ° Westinghouse Science Talent Search ° International Chemistry Olympiad ° International Physics Olympiad
Program Description:	Six finalists will be invited to the Lawrence Hall of Science for interviews. One finalist will be selected for the Ernest O. Lawrence Nobel Travel Award.
How to Enter:	Eligible students will be contacted by the sponsoring agent. If you have any questions, contact Robert Rice (see below).
Awards Given:	An all-expense-paid trip will be given for a student to attend the Nobel awards ceremonies in December in Stockholm, Sweden.
Sponsor:	The Lawrence Hall of Science sponsors this award.
Contact:	Robert Rice Director of the Science Service Office Lawrence Hall of Science University of California Berkeley, CA 94720 (415) 642-4155

Title:	**International Chemistry Olympiad**
Entry Deadline:	The examination takes place in April; the date varies with each local section. Contact a person listed below for details.
Who Is Eligible?	Students who are taking chemistry may apply.
Program Description:	Each local section nominates up to five students to take the International Chemistry Olympiad (ICO) national examination given in April. The top 20 students in the nation attend a ten-day summer study camp at the U.S. Air Force Academy at Colorado Springs, Colorado. Based on their scores on a series of tests on chemical theory and on their laboratory skills, several of these students are then chosen for the international competition.
How to Enter:	Contact your local American Chemical Society (ACS) section. Local sections administer the national qualifying exam.
Awards Given:	The top four students from the study camp will represent the United States in the International Chemistry Olympiad.
Sponsor:	The American Chemical Society sponsors the examination.
Contacts:	For the local section address, write or call:

Bernice Hanrahan
Education Division
American Chemical Society
1155 16th Street, NW
Washington, DC 20036
(202) 872-4382

Janan Hayes
Cosumnes River College
8401 Center Parkway
Sacramento, CA 95823
(916) 686-7204

Title:	**International Physics Olympiad**
Entry Deadline:	Applications must be returned by the beginning of February.
Who Is Eligible?	Students nominated by their physics teachers are eligible.
Program Description:	The purpose of this program is to further the study of physics and related sciences through competition. Teachers nominate outstanding physics students to take a two-part qualifying examination. Student background information is part of the application. The top 20 students in the nation are selected to attend a two-week summer study camp. Four students and an alternate are then selected to represent the United States in the International Physics Olympiad.
How to Enter:	Teachers request an application from the National American Association of Physics Teachers (AAPT) office in Maryland. (See the address below.) About November 12 a general mailing is sent to high schools with second or third year advanced placement physics courses.
Awards Given:	Gold, silver, and bronze achievement awards are given at the International Physics Olympiad. Certificates are given at the local and national levels.
Sponsor:	The American Association of Physics Teachers (AAPT) sponsors this event.
Contact:	AAPT Executive Office Attn: Jack Wilson International Physics Olympiad 5112 Berwyn Road, Second Floor College Park, MD 20740 (301) 345-4200

Title:	**John D. Isaacs Sea Grant Memorial Scholarship**
Entry Deadline:	Two copies of the typed application must be returned by mid-April.
Who Is Eligible?	California high school seniors are eligible who have applied to a college or university in California. Eligible students must have entered a marine science project in a regional or county science fair.
Program Description:	The purpose of this scholarship is to encourage students to pursue further study in marine science in a California college or university program.
How to Enter:	To apply, students should contact the California Sea Grant College Program.
Awards Given:	A four-year, $10,000 scholarship is given to a student, and $500 is awarded to the teacher designated as being especially supportive of the student's research. Awards are presented at the California State Science Fair in May.
Sponsors:	The John D. Isaacs Scholarship is sponsored by the California Sea Grant College Program in cooperation with the San Diego section of the Marine Technology Society.
Contact:	Barbara Lohne, Coordinator California Sea Grant College Program University of California, A-032 La Jolla, CA 92093 (619) 534-4442

Title:	**Junior Science and Humanities Symposium—Northern California**
Entry Deadline:	Applications are due by mid-December; abstracts are due at the beginning of February.
Who Is Eligible?	Senior high school students enrolled in California schools (north from Tulare, Kings, and San Luis Obispo counties) may apply.
Program Description:	This national program is designed to encourage and support science-related student research projects. Students write a paper describing a science research project that they would like to pursue under the guidance of a research scientist.
How to Enter:	Students should complete and return the application form and then develop and submit an abstract of their proposal. Twelve state finalists will be screened at the end of February. In April the Symposium will choose the five national finalists from northern California and western Nevada. Their papers are presented to the students and teachers who have participated in the competition. One paper is chosen for presentation at the National symposium.
Awards Given:	The five national finalists receive expense-paid trips to the National Junior Science and Humanities Symposium in the spring.
Sponsors:	The Lawrence Hall of Science and numerous corporations along with university campuses of California and Nevada serve as sponsors.
Contact:	Robert Rice Director of the Science Service Office Lawrence Hall of Science University of California Berkeley, CA 94720 (415) 642-4155

Title:	**Junior Science and Humanities Symposium—Southern California**
Entry Deadline:	Application forms are available from the director in December. Student proposals are due at the beginning of February.
Who Is Eligible?	Senior high school students enrolled in schools within the following counties may apply for the summer research program: Imperial, Inyo, Kern, Los Angeles, Orange, Riverside, San Bernardino, San Diego, San Luis Obispo, Santa Barbara, and Ventura. All students who attend high school in these counties are invited to attend the symposium.
Program Description:	This national program is designed to encourage and support science-related student research projects. Students write a proposal describing a science research project that they would like to pursue under the guidance of a research scientist. Five finalists and one alternate will be interviewed and placed with specialists (preceptors) in the appropriate area of study near the student's home. The following December, during the two-day symposium, high school students from southern California are invited to hear a major speaker, usually a scientist, as well as talks by the selected students and their preceptors and to tour one of several research facilities.
How to Enter:	Entry information may be requested from the regional director. Interviews of 20 semifinalists will be conducted on a Saturday in March. Five finalists and one alternate will be notified shortly thereafter. Students who are selected will begin work on their research projects during the summer.
Awards Given:	Arrangements will be made for the students to work with industry or university research scientists. Students will present the results of their research at the regional Junior Science and Humanities Symposiums and will receive expense-paid trips to the national Junior Science and Humanities Symposium in the spring. One finalist will be chosen to give a presentation. In addition, one student will have the opportunity to attend the London International Science Fortnight.
Sponsors:	The following serve as sponsors: United States Army Research Office, California Museum of Science and Industry (CMSI), and Muses of the CMSI.
Contact:	Yoshi Yamasaki, Director Southern California Science and Humanities Symposium California Museum of Science and Industry 700 State Drive Los Angeles, CA 90037 (213) 744-7506

Title:	**National Invention Contest**
Entry Deadline:	Entries must be submitted to the *Weekly Reader* by mid-December.
Who Is Eligible?	All students in public or private elementary schools, middle schools, or junior high schools may enter.
Program Description:	The *Weekly Reader* National Invention Contest is an annual competition to stimulate creativity and inventiveness in young people of the United States. The student proposes an invention or innovation and describes what it does, how it works, and how he or she got the idea for it. Drawings or photos need to be submitted. A model of the invention is not necessary. Entries will be judged on their originality, usefulness in addressing real needs, clarity of presentation, and workability.
How to Enter:	Each classroom holds its own contest. First-place winners' entries are sent to the address given below. Submit an application for an entry form with a drawing (no larger than 8 by 11 inches) or a photo attached to the back.
Awards Given:	One winner from each level K-6 and one winner from each of the *Weekly Reader* periodicals: *Current Events*, *Current Science*, *Read and Know Your World Extra* will receive a $250 savings bond and a national winner's certificate. Two grand prize winners are selected from among the 11 national winners; one elementary and one middle school or junior high school student will receive $500 in lieu of the $250 savings bond and an all-expense-paid trip to Washington, D.C., with one teacher and one adult companion to receive the awards from the U.S. Commissioner of Patents at the National Inventor's Expo banquet. Each teacher who sponsors a national winner will also receive a certificate of achievement and a grant of $250 on behalf of the National Invention Center. National winners and their teachers will be personally notified in January.
Sponsors:	These organizations serve as sponsors: Field Publications in cooperation with the U.S. Patent and Trademark Office National Council of Intellectual Property Law Associations National Inventors' Hall of Fame Foundation
Contact:	Irwin Siegelman, Project Director *Weekly Reader* National Invention Contest 245 Long Hill Road Middletown, CT 06457 (203) 638-2638

Title:	**NSTA-NASA Space Science Student Involvement Program**
Entry Deadline:	Return the entry materials by mid-March.
Who Is Eligible?	Any student in grades 7-12 with an interest in space science may participate.
Program Description:	Students propose research projects that are suitable to be conducted in space.
How to Enter:	The following is required to enter: 1. Request entry materials from the National Science Teachers Association/Space Shuttle Student Involvement Project (NSTA/SSSIP) office. 2. Prepare a proposal, not to exceed 1,000 words, describing your proposed space experiment in accordance with the rules booklet for the Space Science Student Involvement Project. 3. Send your materials to the Regional Director or the NSTA as stated in the entry materials.
Awards Given:	Regional winners and their teachers or advisers will participate, with expenses paid, in a regional space science symposium in the spring. Certificates will be awarded to winners, their teachers or advisers, and their schools. National winners and their teachers or advisers will attend, with expenses paid, a National Space Science Symposium in late summer. Awards include scholarships and internships for national winners.
Sponsors:	The National Science Teachers Association (NSTA) and the National Aeronautics and Space Administration (NASA) sponsor this program.
Contact:	Entry materials Space Science Student Involvement Project NSTA 1742 Connecticut Avenue, NW Washington, DC 20009 (202) 328-5800

Title: **The People to People Youth Science Exchange**

Entry Deadline: Applications should be submitted by April 1.

Who Is Eligible? High school students may apply who have a strong academic standing and scientific background, an interest in world affairs, and an aptitude for leadership.

Program Description: The People to People Youth Science Exchange grew out of a U.S. State Department program established in the 1950s. In 1961 the program became a private, nonprofit organization whose goal is to promote the free interchange of ideas, inquiry, and knowledge among high school science students from the United States, the People's Republic of China, and the Soviet Union, using the common language of scientific interest. The program emphasizes hands-on science activities, cultural activities, and recreation. Participants experience the cultural richness of one of the countries through 21-day visits to such places as the Forbidden City, the Summer Palace, and the Great Wall in China or to Red Square, the Kremlin, and the Hermitage in the Soviet Union.

Students selected for the program are called student ambassadors; they receive a manual outlining their responsibilities and providing practical travel suggestions. They attend six orientation sessions to prepare them for their project; parents are encouraged to attend these meetings also. University credit may be earned through Eastern Washington University in Cheney and is generally transferable nationwide.

How to Enter: Students complete and submit an application, a screening questionnaire, and letters of recommendation from three adults, including a science teacher, administrator, or counselor. The final step in the selection process is a personal interview arranged locally. A full description of the program and application materials are available from the address listed below.

Costs: Students are responsible for the cost of the program, which amounts to $3,250, not including domestic travel to and from a gateway point in the United States. Seniors graduating in June may be eligible for assistance from the federal Guaranteed Student Loan Program, and other loans are available also. Staff members of the People to People program can suggest ways for students to raise the necessary financial support.

Contact: Keith A. Currie, Program Director
People to People Youth Science Exchange
Dwight D. Eisenhower Building
Spokane, WA 99202
(509) 534-0430
(800) 999-7882

Title:	**Publication in a Science and Technology Journal**
Entry Deadline:	Papers are accepted at any time and are generally published in a special issue each year.
Who Is Eligible?	Students, under the age of 23, who are involved in independent research may submit papers.
Program Description:	*BASE—A Journal of Science and Technology* encourages students to write scientific papers which describe original research or theories. Students may submit their own innovative investigations from any area of the sciences. *BASE* provides a mechanism for students to present unusual, workable ideas to a scientific board to review. The paper may be returned to the students with suggestions for further study or research in readiness for publication. Papers have been accepted from all states as well as from foreign countries.
How to Enter:	Submit papers up to ten typewritten pages with a cover letter.
Awards Given:	Students receive recognition by having their research published.
Sponsors:	The Alin Foundation, with major support from the San Francisco Bay Area Science Fair, sponsors this program.
Contacts:	K. N. Matsumura Alin Foundation 2107 Dwight Berkeley, CA 94704-2062 (415) 642-4155 Robert Rice Director of the Science Service Office Lawrence Hall of Science University of California Berkeley, CA 94720

Title:	**Science Essay Awards Program**
Entry Deadline:	The appropriate materials must be submitted by the middle of January.
Who Is Eligible?	Students in grades 7-12 may apply. The senior division consists of grades 10-12, and the junior division is for grades 7-9.
Program Description:	Students write an essay of 600 to 1,000 words on a topic of their choice or on one of the suggested science topics. Scientific insight and clear communication are critical in this competition. Students may discover that science is meaningful not only to the men and women who are devoting their lives to it but also to new members of the scientific community, the students themselves.
How to Enter:	Contact the person listed below.
Awards Given:	Each of the following awards is given in both the senior and junior divisions: $1,500 for first place; $750 for second place; $500 for third place; and 48 honorable mention prizes of $50. First-place winners take a trip with one parent and one teacher to the annual NSTA conference in St. Louis, where they will be honored at the awards presentation ceremony.
Sponsors:	The DuPont Company and General Learning Corporation, in association with the National Science Teachers Association, and the *Biology Bulletin Monthly* sponsor the program.
Contact:	Ardis Mistak, Coordinator Science Essay Awards Program General Learning Corporation 60 Revere Drive Northbrook, IL 60062-1563 1-800-323-5471

Title:	**Science Week Award, Lawrence Berkeley Laboratory**
Entry Deadline:	Finalists are selected from a list of science competitions held in May.
Who Is Eligible?	California winners of the following competitions are eligible: Science Fair (senior division grand prize only) Junior Science and Humanities Symposium (first-place only) Westinghouse Science Talent Search International Chemistry Olympiad International Physics Olympiad Winners of other events may be eligible, as determined by the Director for Precollege Education Programs.
Program Description:	Students and their mentor science teachers will spend a week at the Lawrence Berkeley Laboratory. Activities will include meeting scientists; attending lectures and seminars; participating in hands-on experiments in the research laboratories; and touring major science research facilities, such as the Bevatron, the National Center for Electron Microscopy, and the Heavy Ion Linear Accelerator (Super HILAC).
How to Enter:	Contact the person listed below.
Sponsor:	The Lawrence Berkeley Laboratory sponsors this program.
Contact:	Lucy Day Director for Precollege Education Programs Lawrence Berkeley Laboratory University of California Berkeley, CA 94720 (415) 486-4015

Title:	**Southern California Academy of Science–Research Training Program**
Entry Deadline:	Students must apply by early October.
Who Is Eligible?	High school science students who are recommended by their teachers and who live in the southern California area are eligible to apply.
Program Description:	Students are given an opportunity to do active research on projects of their choice under the individual direction of professional scientists in their own or nearby communities.
How to Enter:	An application and a letter of recommendation from a science teacher may be mailed together or separately and must be postmarked by the deadline date. Call (213) 744-3384 for the exact date. Active work for selected students begins in November and must be finished by mid-April. A written report on the research project must be prepared by the end of April, and an oral presentation will be arranged at the annual Southern California Academy of Science conference in May.
Awards Given:	Arrangements will be made for students to work with professional scientists. Grants of up to $250 will be available to the research directors to defray project costs. Some papers will be selected for presentation at the annual American Junior Academy of Sciences and American Association for the Advancement of Science meeting the following year.
Sponsors:	These organizations sponsor this program: Southern California Academy of Sciences American Association for the Advancement of Science (AAAS) Atlantic Richfield Foundation
Contact:	Gloria Takahashi, Director of High School Programs Southern California Academy of Sciences 900 Exposition Boulevard Los Angeles, CA 90007 (213) 744-3384

Title: **Westinghouse Science Talent Search**

Entry Deadline: All entries must be in the office of Science Service by a given date, usually in mid-December.

Who Is Eligible? High school seniors whose work meets standard college entrance requirements may apply.

Program Description: A nationwide competition is held in which entrants are judged on the following: (1) college entrance test scores; (2) high school records; (3) teachers' recommendations; and (4) a written report on the development of a science project. Projects including experimentation with live vertebrate animals (except for behavioral observations in the natural habitat) are not eligible. Special regulations apply to projects involving human subjects.

How to Enter: Students write, in accepted scientific report form, a description (approximately 1,000 words in length) of an original research project. This report must be submitted, along with the Science Talent Search "Personal Data Blank" (containing sections to be completed by the student, the teachers, and the principal); national test scores, for example, the *Scholastic Aptitude Test*; a high school transcript; and a letter of recommendation from a teacher or school administrator. Teachers should request entry materials for each interested student early in the school year.

Awards Given: The names of three hundred honorable mention award winners will be brought to the attention of colleges, universities, and technical schools in the United States. The top 40 of these winners will receive expense-paid trips to attend the five-day Science Talent Institute in Washington, D.C., from February through March, where the following awards will be made:

Award (number)	Amount and Type
first-place (1)	$20,000 scholarship
second-place (2)	$15,000 scholarships
third-place (3)	$10,000 scholarships
fourth-place (4)	$ 7,500 scholarships
finalist (30)	$ 500 cash

Sponsor: Westinghouse Foundation and Science Service sponsors this program.

Contact: Carol Luszcz, Program Director
Westinghouse Science Talent Search
Science Service
1719 N Street., NW
Washington, DC 20036
(202) 785-2255

D. Extracurricular Opportunities

The resources for extracurricular activities are numerous. Those listed in this section are generally available to students throughout California. Students and teachers of science are encouraged to seek out and take advantage of all available resources to make this subject come alive for students.

Title: **Ames Research Center—National Aeronautics and Space Administration**

Locations: The National Aeronautics and Space Administration (NASA) Ames Research Center is located at the Moffett Field U.S. Naval Air Station off U.S. Highway 101 near Mountain View in the San Jose area.

Who Is Eligible? Services and programs are available for public and private elementary schools and secondary schools, colleges, and universities.

Cost: No cost is charged for services; however, schools are requested to cover the cost of materials, speakers' expenses, and so forth.

Program Description: The Ames Research Center offers the following programs and services:

- School presentations. Auditorium and classroom presentations on NASA's past, present, and future work are conducted by traveling aerospace educational specialists. Outstanding audiovisual materials, models, and demonstrations are used. Scientists and engineers from NASA may be available to visit schools, if their work schedule permits. Schools pay the per diem and transportation expenses of the speaker. Please make reservations six to twelve months in advance.

- Telelectures. NASA places a prearranged call to a classroom that this agency has equipped with a speak-a-phone. Students view slide sets, furnished in advance by NASA, listen to the speaker, and ask questions at the end of the talk. Please make arrangements at least one month in advance.

- Center visits. Schools and community groups may view the Ames facilities on one-half to two-hour tours. Make reservations at least one month in advance. Call (415) 694-6497 or the Educational Programs Office.

- Films and other materials. NASA documentary films are currently being loaned at no charge; however, borrowers pay return postage and insurance. Please order films at least 30 days in advance. Write to the Educational Programs Office or call (415) 694-6270 for the film catalog, which includes order forms. On written request, teachers may order instructional kits and NASA publications free of charge. Order from:

  Superintendent of Documents
  U.S. Government Printing Office
  Washington, DC 20402

  Or call the federal book store nearest you:

  San Francisco - (415) 556-6657, 556-0642
  Los Angeles - (213) 688-5841

Teachers on the NASA mailing list receive copies of new educational publications and a quarterly newsletter, *Notes to Educators*. To be on the list, send your name and address to the Educational Programs Office.

Sponsors: The Ames Research Center is a tax-supported federal government laboratory.

Contacts:

For information about services in northern California, contact:

Garth A. Hull
Educational Programs Officer
(415) 694-5543

For information about services in southern California, contact:

B. Michael Donahoe
Educational Programs Officer
(415) 694-5544

Both programs' officers are located at:

Educational Programs Office
NASA-Ames Research Center
Moffett Field, CA 94035

Title: **California Academy of Sciences—Natural History Museum and Aquarium**

Public Hours: The academy is open every day of the year from 10 a.m. to 5 p.m.

Program Description: The Academy of Sciences offers educational programs for every learning level. Educational services include:

- The Discovery Room. This room for hands-on activities, which is ideally suited for young children and the handicapped, encourages learning through self-discovery. Teachers may arrange for exclusive use of the room on Tuesday through Friday mornings by calling (415) 750-7155. In the afternoons and on weekends the room is open to the public.

- Planetarium. Student shows designed especially for preschool through grade 8 are available with advance reservations during the school year. Call the Planetarium Office at (415) 650-7127. For recorded schedules for public shows and sky information, call (415) 750-7141. For information about the laserium show, call (415) 750-7140. Live music concerts are given on a regular schedule; call (415) 750-7129.

- Young audiences. Live performances by professional artists of dance, music, and drama are given monthly in the Hall of Human Cultures. After being admitted to the building, visitors are not charged for these performances. Call (415) 750-7221.

- Other programs. A continuous schedule of evening presentations is available on a variety of natural history topics. Classes and field trips are offered to members and nonmembers through the activities calendar. To receive information, please call (415) 750-7100. Birthday parties may now be arranged at the academy; call (415) 750-7221.

Location: The Academy of Sciences is located near the de Young Museum and the Arboretum in Golden Gate Park.

Cost: Docents conduct free guided tours of the major exhibit halls for grades three and above. Advance reservations are required. Admission for school groups is 50 cents per person, including adults. All San Francisco school groups are admitted free of charge. Memberships are available.

Sponsors: The academy is a private, nonprofit organization supported through memberships and contributions.

Contact: Susan E. Douglas, Director of Education
California Academy of Sciences
Golden Gate Park
San Francisco, CA 94118
(415) 221-5100

Title:	**California Museum of Science and Industry**
Public Hours:	The museum is open every day from 10 a.m. to 5 p.m.
Location:	Covering 125 acres, the museum is located near the Los Angeles Coliseum.
Cost:	Admission is free. However, membership in the California Museum Foundation is encouraged. There is a charge for the IMAX Theater, which is open from 10 a.m. to 9 p.m.
Program Description:	A $55 million renovation of the museum has revitalized and tripled the size of a set of innovative exhibits. Visitors may interact with the exhibits and learn basic principles of science and technology. Four new structures are drawing visitors: the Aerospace Building, the Mitsubishi IMAX Theater, the Mark Taper Hall of Economics and Finance, and the Museum of Afro-American History and Culture. Additionally, the Corwin D. Denney Air and Space Garden displays numerous aircraft, including full-size commercial planes. The main exhibit area, Science Wing and Industry Hall, has new interactive computer exhibits.
Sponsors:	The state of California operates the museum. Additional funds are obtained from individuals and corporations through the nonprofit California Museum Foundation. For example, E.F. Hutton supports the EARTHQUAKE Exhibit, the largest earthquake simulator in the nation open to the public. Hanna-Barbera Productions created a Yogi Bear video, which teaches visitors how to behave during and after an earthquake to maximize their safety.
Contacts:	California Museum of Science and Industry 700 State Drive Los Angeles, CA 90037 Information about the museum's activities may be obtained by calling the following numbers: (213) 744-7440 (Teachers' Workshops and "Exploring Science on Saturday") (213) 744-7504 (Information about membership contributions and privileges) (213) 744-7400 (General Information) (213) 744-7437 (Education Office)

Title:	**The Exploratorium**
Public Hours:	The museum is closed on Mondays and Tuesdays. Fall, winter, and spring hours are: Wednesday, 1 p.m. to 9:30 p.m. Thursday and Friday, 1 p.m. to 5 p.m. Saturday and Sunday, 10 a.m. to 5 p.m. The summer hours are: Wednesday, 11 a.m. to 9:30 p.m. Thursday and Friday, 11 a.m. to 5 p.m. Saturday and Sunday, 10 a.m. to 5 p.m.
Admission:	Admission is free for persons 17 years or younger, $2 for seniors and organized groups, and $4 for adults (any ticket is good for six months). Members are admitted free. Ample parking is available, and wheelchair access is provided.
Program Description:	The Exploratorium is a museum for people of all ages and all levels of scientific understanding. Visitors can enjoy the natural phenomena that have been discovered by scientists or observed by artists. Children can use exhibits to demonstrate concepts to their parents or vice versa. School groups are invited to the Exploratorium even when it is not open to the public. Arrangements need to be made ahead of time. A student fee is charged, but adult chaperons are admitted free. College-age "Explainers" provide demonstrations and explanations of the exhibits, and they are available to talk and work with teachers.
Location:	The Exploratorium is located in the Palace of Fine Arts, close to Golden Gate Park, and across from the San Francisco Marina.
Sponsors:	The Exploratorium has been funded by government agencies (for example, the city of San Francisco provides the space rent free and contributes about 6 percent of the annual budget). Private foundations, individual gifts, corporations, store income, and memberships are other sources of funds. Donations are always welcome.
Contact:	The Exploratorium 3601 Lyon Street San Francisco, CA 94123 (415) 563-3200 (recorded message) or (415) 563-7337

Title:	**Great Explorations in Mathematics and Science (GEMS)**
Locations:	Workshops are held at the Lawrence Hall of Science at the Berkeley campus, or they may be arranged at school sites.
Who Is Eligible?	Preschool through grade 10 students are eligible.
Cost:	Approximately $4.50 to $11 is charged for each *GEMS Teacher's Guide*. The cost varies, depending on the number of activities in the *Guide*. The *School Assembly Presenter's Guide* is $10 each and the *Exhibit Guide* is $29.50. Workshops are available for groups of teachers. Please call or write for further information.
Program Description:	GEMS consists of a collection of some succesful programs that were developed at the Lawrence Hall of Science and that cover concepts across the sciences. These activities have been field-tested in classrooms nationwide, revised by several hundred classroom teachers, and described in published documents. There are over 20 teacher's guides now available, which contain from two to 15 lessons with hands-on activities integrating mathematics and science. The activities, with the use of easy-to-obtain materials, are designed to teach key science concepts and processes. In addition, two guides for school assembly presentations are available, targeted toward grades 3-6, but they are adaptable to any grade level. One of eight exhibit guides currently offered by GEMS, "Shapes, Loops, and Images," presents ideas for exhibits with hands-on experiences, using logic and spatial relationships. GEMS materials are keyed to the *Science Framework Addendum for California Public Schools*. Once introduced in a workshop, the units may be used successfully without additional special instruction in mathematics or science for the teacher.
Sponsors:	The Lawrence Hall of Science publishes its own curriculum, supported by the A.W. Mellon Foundation and the Carnegie Corporation of New York.
Contacts:	Jacquey Barber, Director Cynthia Ashley, Program Representative GEMS c/o Lawrence Hall of Science University of California Berkeley, CA 94720 (415) 642-7771

Title:	**International Summer Institute**
Entry Deadline:	Students must apply before the end of May.
Who Is Eligible?	Students aged 13 to 18 are eligible.
Program Description:	At the International Summer Institute, the following are offered: advanced mathematics, science, and computer courses; courses to prepare for *Scholastic Aptitude Tests (SAT)*; seminars on mathematics and science research by leading scientists; computer-oriented research projects; visits to research laboratories; cultural exchanges with foreign students, which include chess lessons, a marine biology cruise, sports and recreation; and films, concerts, and other cultural events.
Locations:	Institutes will be held at Southampton College of Long Island University, Southampton, New York, or the University of California at Los Angeles, Westwood, California.
Cost:	Two three-week sessions with college credit are offered. Students may attend either session or the full six weeks. The sessions are customarily held in July and August. The fee depends on whether enrollment is for three or six weeks. Some financial aid is available.
Sponsors:	The National Center for Excellence in Education sponsors this event in cooperation with: Long Island University University of California, Los Angeles National Council of Teachers of Mathematics National Science Teachers Association Stanley Kaplan Educational Center Corporate sponsors
Contact:	Edward Lozansky National Center for Excellence in Education 4301 Connecticut Avenue, NW Washington, DC 20008 (202) 364-0200

Title: **Lawrence Hall of Science**

Locations: The Lawrence Hall of Science (LHS) is located in the hills above the University of California, Berkeley.

Who Is Eligible? Students of all levels may participate in LHS programs.

Cost: Generally, workshops are provided at no cost, and materials are provided at cost. Please contact the Lawrence Hall of Science for details.

Program Description: LHS is a multipurpose educational facility. Hands-on, exploratory models and displays draw community groups, school groups, and the general public. The following projects are available to all students depending on grade level:

- The astronomy and physics project. Classes, planetarium programs, exhibits, outreach classes, and science curriculum materials are offered in physical science and astronomy. The Wizards Lab provides free exploration of many kinds of physics apparatus and demonstrations of electricity and lasers. Call (415) 642-5362 for information.

- The biology education program. The Biology Discovery Lab encourages hands-on interactions with science equipment and a variety of gentle animals, which help students learn techniques of animal care. For information about programs for levels K-2, call (415) 642-0345; for grades 3 and up, call (415) 642-9635; and for the Biology Discover Lab, call (415) 642-9680.

- Chemical Education Material Study (CHEM Study). This program of written materials and films is designed to improve the teaching of chemistry at the high school level. Its success has been demonstrated in the United States and abroad.

- The chemistry education program. Children's excitement and natural curiosity leads to development of science skills and learning concepts in chemistry. Call (415) 642-7771 for information.

- The science-based health program (HAP K-8). The principal goal of HAP K-8 is to help children understand that they are in charge of their own well-being. The program uses experiments and the discovery approach to involve students in learning activities such as data collection and analysis leading to problem solving. For information and appropriate grade levels call (415) 643-6451.

- The rocketry project. The LHS staff has developed an eight-session course for students aged 9 through 15 in how to conduct controlled rocket experiments.

- The LHS Science Discovery Theatre. Short plays which give dramatic impact to scientific content are performed at LHS and in Bay Area schools by actors selected from the Dramatic Arts Department of the University of California, Berkeley.

- The Science Shuttle. LHS staff turn elementary and junior high school classrooms into science laboratories by using an inflatable planetarium, animals, chemistry experiments, and mathematics activities. The Science Shuttle may be presented also as an assembly program.

- Summer camp. Each summer the camps combine the discovery approach to learning natural history with the fun of outdoor adventure. The Science Camp is for ages 8-13 and the Research Camp is for ages 13-18. Call (415) 642-2275 for information.

The LHS staff present numerous after school science-related classes, which change regularly. They also provide a unique way to celebrate a birthday with a "Party Workshop" at LHS. These hands-on workshops in astronomy, biology, chemistry, or physical science take advantage of innovative techniques and facilitites to provide learning with fun. Reservations for party workshops are required and must be made at least four weeks in advance. For information about the workshops and classes and the appropriate ages of the participants, write for *The LHS Quarterly* or call (415) 642-5134 Monday through Friday, 8:30 a.m. to 4:30 p.m.

Sponsors:

LHS cooperates with industry, private foundations, the University of California, and other learning centers and institutions to develop its program exhibits and projects.

Contact:

Herbert D. Thier, Associate Director
Lawrence Hall of Science
University of California
Berkeley, CA 94720
(415) 642-8718

Title: **Lawrence Livermore National Laboratory**

Entry Deadline: Call for arranging educational services.

Who Is Eligible? The program targets San Francisco Bay Area teachers who wish to improve their knowledge of science education. Also, some services are available for students in schools located at distances exceeding 100 miles from the laboratory.

Program Description: Since its opening in 1984, the Lawrence Livermore National Laboratory (LLNL) Science Education Center (SEC) has served as a major resource center, sharing laboratory expertise in science, mathematics, and computers with students and teachers. The SEC has a miniauditorium for demonstrations, lectures, and films; an experiment corner for hands-on scientific experiments; a resource library; and a dozen microcomputers. SEC programs include:

1. Computer education offers classes, workshops, and self-guided tutorials on LOGO, BASIC, typing, and other programs for students, teachers, and other school personnel.

2. The science library provides texts and periodicals.

3. The guest speaker series provides a wide range of topics tailored to the needs of the audience, providing current and relevant information about LLNL and applied mathematics topics.

4. The *Science Education Center Report* is a monthly newsletter for teachers and students on SEC activities.

5. The tutorial program provides seventh grade through college level students with help in understanding science, mathematics, and computers.

6. The U.S. Department of Energy High School Supercomputer Honors Program is held for two weeks during the summer.

How to Enter: Call or write one of the contacts listed below.

Sponsors: The Lawrence Livermore National Laboratory is operated by the University of California for the U. S. Department of Energy.

Contacts:

Hector Timourian
Director of Science Programs
Science Education Center
P. O. Box 808, L-793
Livermore, CA 94550
(415) 423-0556

Stephen Sesko
Associate Administrator
Science Education Center
P. O. Box 808, L-793
Livermore, CA 94550
(415) 423-0556

Title:	**Math/Science Network for Girls**
Entry Deadline:	Dates for registration vary at each location; conferences are generally held in the spring.
Who Is Eligible?	Junior high school and high school girls are eligible.
Program Description:	The "Expanding Your Horizons" conferences for girls in grades 7-12 are offered once a year. Participants hear speakers from various professions in science, technology, and mathematics and receive encouragement to pursue careers which involve the use of mathematics and the sciences. Hands-on experiences, discussion of career options, and sharing with peers are among the activities at some of the conferences.
How to Enter:	Register in January and February. For further information see the address and phone number listed below.
Locations:	These statewide conferences are usually held in March, although dates and locations vary. In most locations conferences are held either after school on a weekday or on a Saturday. Please contact the individuals listed below for further information regarding the nearest conference.
Cost:	A minimal fee, usually $3 to $10, is charged for meal, facility use, and materials. Preregistration is required.
Sponsors:	The Math/Science Network, with headquarters at Mills College in Oakland, and local branches of the American Association of University Women coordinate the conferences. Speakers, workshop leaders, and volunteers at the conferences are usually local professional women and interested individuals. Local businesses and industry often contribute appropriate materials and equipment for the participants.
Contacts:	Joy Wallace, Program Director Susan Stanley, Secretary Math/Science Network c/o Mills College 5000 MacArthur Boulevard Oakland, CA 94613 (415) 430-2230 (415) 430-2255 (Campus Information)

Title:	**MESA: Mathematics, Engineering, and Science Achievement**
Entry Deadline:	There is no deadline for membership. However, the best time to begin a new chapter is in March.
Who Is Eligible?	Any middle school, junior high school, or high school desiring to target historically underrepresented minorities (for example, American Indian, Mexican-American, black, or Puerto Rican) for special assistance in achieving success in mathematics, engineering, or science may apply.
Program Description:	There are 17 MESA precollege centers in California, each affiliated with a university that has a strong engineering or physical science department. A network of individuals and organizations around the state supports MESA through donations of time, money, and professional skills. The MESA Program helps minority students to meet goals that lead to a mathematics-based college program. MESA offers organized study, academic advising, summer enrichment programs, and scholarship incentive awards. Meetings (to meet professional role models and to learn how to write resumes and apply for jobs), career exploration, and family involvement are also provided. Ninety percent of the high school seniors who participate in MESA pursue mathematics-related fields in college.
How to Enter:	A principal or teacher completes a MESA form, which may be obtained from the contact named below. Information is requested about the school's minority population, the mathematics/science curriculum, and the capacity of the school to provide extracurricular activities for minority students (tutoring, field trips, and so forth). The name of a teacher sponsor is also requested.
Awards Given:	At an annual banquet, recognition for achievement is provided by the MESA centers in the form of material awards (for example, backpacks, calculators, T-shirts, and cash grants).
Sponsors:	The University and College Opportunities Unit of the California State Department of Education and industries such as Atlantic Richfield, Pacific Telesis, IBM, and Hewlett Packard serve as sponsors. In addition to money grants, sponsoring firms provide eight loaned executives, who work full time helping to manage MESA.
Contact:	To learn the name of one of the 17 centers nearest your school, contact: Fred Easter, Statewide Director MESA Lawrence Hall of Science University of California Berkeley, CA 94720 (415) 642-5064.

Other Extracurricular Opportunities

Does your school have a science club? Many schools have both student science clubs and parents' support organizations to encourage the study of science and to raise funds for special projects such as field trips, science fairs, computers, equipment, and so forth. If your school has a science club that interests you, join it. If not, start one.

A list of some student science clubs follows:

Amateur Radio Club
Astronomy Club
Biology Club
Computer Club
Earth Science Club
Ecology Club
Emergency Medical Training Club
Environmental Concerns Club
Health Care Club
Junior Engineering Technical Society (JETS)
Junior High School Science Club
Meteorology Club
Physics Club
Rocketry Club
Rocks and Minerals Club
Space Science Club

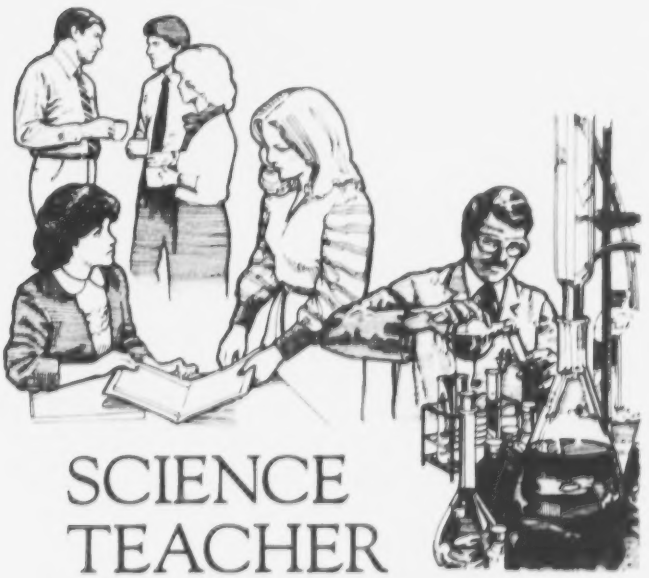
Title:	**Precollege Programs for High Ability Science Students**
Entry Deadline:	Students are encouraged to apply early in the calendar year. Deadlines may vary at each institution.
Who Is Eligible?	Each of the sponsoring institutions sets the criteria for eligibility. In general, admission is based on a combination of scholastic ability; completion of certain courses; recommendations from the high school teacher, principal, and/or counselor; and motivation. In some cases programs give preference to minorities. Some institutions have established specific selection criteria, such as a certain grade point average (GPA) or a GPA based on science courses which the student has taken.
Program Description:	Several California institutions provide educational opportunities in science, engineering, and mathematics for talented precollege (generally high school) students. The three general types of programs are research, courses, or a combination of research and courses. These may be offered during the summer, during the academic year, or year-round. Students may commute to or reside at the facility. Some of the institutions charge for participation; others do not.
How to Enter:	Contact the learning institution nearest you for further information.
Locations:	For the names of all the participating institutions, send $3 for a copy of the *Directory of Student Science Training Program for High Ability Precollege Students* to Science Service at the address given below. For the name of the nearest institution, contact the Mathematics and Science Education Unit listed below.
Sponsors:	Science Services publishes the directory each year. The National Science Foundation supports, in part, the publication of the directory.
Contact:	Science Service 1719 N Street, NW Washington, DC 20036 Attn: Carol Luszcz (202) 785-2255 Mathematics and Science Education Unit California State Department of Education 721 Capitol Mall Mailing address: P. O. Box 944244 Sacramento, CA 94244-2720 (916) 324-7190

Title:	**Roswell Park Memorial Institute**
Entry Deadline:	Students must complete the application and return it by mid-March.
Who Is Eligible?	High school students who are currently in their junior year are eligible for this program.
Program Description:	The program is designed for students with a strong science background. The program objectives are to expose science students to an atmosphere of intensive research, aid them in career planning, and have them sample the work life of a research scientist. Participants spend 80 percent of their time in a research laboratory, and the remaining 20 percent is spent attending lectures and multidisciplinary seminars. During the last week of the program, a three-day science conference provides an opportunity for each participant to make an oral presentation on the project work in the laboratory and prepare a poster display of the research project work accomplished. The program typically runs from late June through the middle of August.
How to Enter:	Applications may be requested by writing to the contact listed below.
Costs:	Students who reside in the dormitory will be charged a basic fee of $900. This amount covers approximately $800 for room and board in a residence hall at the State University of New York at Buffalo. The balance of the $900 fee is returned to the student as a stipend for other living expenses. Roswell Park Memorial Institute does not charge students for the program. The basic fee covers their living expenses during the program. The National Science Foundation may provide funds in some cases to cover the basic fee of $900 for out-of-town students. Some students are sponsored by local clubs, high schools, organizations, and businesses which raise funds for expenses.
Contact:	Edwin A. Mirand or Craig Johnson Roswell Park Memorial Institute 666 Elm Street Buffalo, NY 14263 (716) 845-3229

Title:	**U.S. Department of Energy High School Honors Program**
Entry Deadline:	Applications are due by March 1.
Who Is Eligible?	High school students who have a strong interest in mathematics, science, and/or computers and who are recommended by their teachers, principals, and parents are encouraged to apply. Students who are entering their senior year and have shown exceptional achievement in completing high school science classes will be chosen to represent California.
Program Description:	Six high school students from California will be selected to attend a two-week session at one of six U.S. Department of Energy laboratories. This program is aimed at placing some of America's most promising high school students in an environment that is both intellectually challenging and culturally inspiring. Students are exposed to a wide variety of topics and encouraged to discuss both the advances and social implications of science, computers, and mathematics.
How to Enter:	Write to the address given below to request an application. The student completes the application, which includes writing a short essay, and returns it to the Mathematics and Science Education Unit of the California State Department of Education by March 1. Signatures of the parent, teacher, and principal recommending the student are required.
Awards Given:	Nominees will attend an expense-paid, two-week session at one of the U.S. Department of Energy laboratories in the United States.
Locations:	The U.S. Department of Energy laboratories are at the following locations and offer these program topics: ° Superconductivity; Argonne, Illinois ° Chemistry; Brookhaven, Long Island ° Physics; Fermi Laboratory, Chicago ° Life Sciences; Lawrence Berkeley Laboratory, California ° Computers and Mathematics; Lawrence Livermore National Laboratory, California ° Environmental Studies; Oak Ridge, Tennessee
Selection:	The Governor of California usually selects participants from a list of students who are screened and recommended by staff from the California State Department of Education.
Sponsor:	The honors program is sponsored by the U.S. Department of Energy.
Contact:	U.S. Department of Energy High School Honors Program Mathematics and Science Education Unit California State Department of Education 721 Capitol Mall Mailing address: P. O. Box 944272 Sacramento, CA 94244-2720 (916) 324-7190

Title:	**Young Astronauts Program**
Entry Deadline:	Chapter memberships begin on September 1 and end on August 31 of the following year.
Who Is Eligible?	Elementary school and junior high school students in grades 1-9 are eligible for membership.
Program Description:	Young Astronauts encourages students in elementary and junior high schools to study science, mathematics, technology, and other related subjects. Aerospace experts and representatives of all major professional education associations serve on the Education and Technology Advisory Board. They review materials to blend learning with fun in classroom activities. Specialized materials, which are sent to the schools quarterly, are available for grades 1-3 (Trainee), grades 4-6 (Pilot), and grades 7-9 (Commander).
How to Enter:	See the address and phone number listed below. A chapter registration form must be filled out by the teacher, parent, or volunteer who wishes to be the chapter leader. Annual dues of $20 per chapter are sent in with the registration form.
Awards Given:	Each chapter receives a chapter certificate. At no extra charge schools have the option to use "Astro Net," a computer program that has related activities. Information is also provided on contests which have a variety of prizes, such as foreign exchanges, trips, and plaques.
Sponsors:	Young Astronauts is presently sponsored by major corporations. The organization, which was established through the Private Sector Initiative of the White House, was developed in the summer of 1984 and implemented in October, 1984.
Contacts:	Wendell Butler, Executive Director Jennifer Rae, Membership Services Young Astronaut Council P. O. Box 65432 Washington, DC 20036 (202) 682-1985

Please replace this sheet with divider labeled **Science Teachers**.



SCIENCE TEACHER ENRICHMENT OPPORTUNITIES

II. Science Teacher Enrichment Opportunities

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A. Professional Recognition, Awards, and Grants

Opportunities for professional and personal growth for educators are limitless. California teachers have been recognized as having outstanding programs and achievements in science education.

The programs listed in this section honor science teachers whose efforts touch the lives of their students with far-reaching consequences and whose dedication to giving students their best is worthy of applause.

All science educators are encouraged to apply for these programs.

Title:	**C. S. Brod's/California Science Teachers Association Awards in Science Education**
Entry Deadline:	Materials from applicants must be submitted by mid-March.
Who Is Eligible?	Any teacher who is currently teaching science in a California school may apply.
Program Description:	Six awards are presented each year, three in the spring and three in the fall. The three divisions are: K-grade 5 Grades 6-8 Grades 9-12 The awards are presented to innovative science teachers whose hands-on activity is judged to be both original and exemplary, based on the following criteria: ° Scientifically correct ° Educationally sound ° Appropriate to grade level ° Innovative use of materials ° Cost effectiveness ° Interesting and engaging to students
How to Enter:	Contact the association at the phone number and address listed below for criteria, guidelines, and current information.
Awards:	Awards are given of $250 cash and a $100 gift certificate for C.S. Brod's, a retail toy store specializing in high-quality educational materials. Other awards and recognition of value to science educators are also presented to the awardees.
Sponsors:	The science award is jointly sponsored by C.S. Brod's and the California Science Teachers Association (CSTA), with some awards donated by McGraw-Hill/EMS and Apple Computer, Inc.
Contact:	California Science Teachers Association C.S. Brod's/CSTA Award Lawrence Hall of Science University of California Berkeley, CA 94720 (415) 642-4155

Title:	**Environmental Education License Plate Grant Program**
Entry Deadline:	Grant proposals are accepted up to the deadline date, which is usually June 15. Proposals are generally read in July.
Who Is Eligible?	Individual teachers, education consortia, public or private nonprofit agencies, and colleges may apply. Grants are often made directly to teachers with the approval of their school district.
Program Description:	This program encourages effective school and community programs which help students learn the importance of using natural resources wisely and the necessity of constructive individual and social action in preserving environmental quality. The programs use community resources and produce programs and materials of lasting benefit to the applicant agency and the students they serve. The programs must have direct benefit for K-12 students.
Awards:	The four categories of grants are listed below. The amount of the awards in the first three categories may not exceed $15,000. Minigrants may not exceed $3,000 each. Approximately $150,000 will be available for the competitive grant program. 1. Implementation: The applicant selects an environmental education program or materials of proven worth; adapts it to the local situation, if needed; and takes appropriate steps to get the program underway in the new setting. 2. Developmental: The applicant produces a program or materials of great potential value to the local community and schools. 3. Site/Facility Development: The applicant agency demonstrates a need for a local site or facility, the development of which will result in more effective environmental education instruction for students. 4. Minigrants: Grants limited to $3,000 or less are awarded for small scale projects in any of the catagories listed above or for other purposes which will continue to benefit the target audience after the state funds have been used.
Sponsors:	The Mathematics and Science Education Unit of the California State Department of Education conducts the grant program with funds from the Environmental License Plate Program.
Contact:	Coordinator, Environmental Education Mathematics and Science Education Unit California State Department of Education 721 Capitol Mall Mailing address: P. O. Box 944272 Sacramento, CA 94244-2720 (916) 323-2602 or 324-7190

Title:	**GTE Growth Initiatives for Teachers (GIFT)**
Entry Deadline:	Applicants' materials must be submitted by mid-January.
Who Is Eligible?	GIFT is available to public and private secondary school (grades 7-12) mathematics and science teachers in Arizona, California, Florida, Indiana, Massachusetts, North Carolina, Texas, and the District of Columbia.
Program Description:	GIFT provides opportunities for school enrichment and professional development. A teaching team consisting of one mathematics teacher and one science teacher submits a proposal that integrates both subjects to promote effective student outcomes. Each team member also submits an individual personal development proposal.
How to Enter:	Brochures are sent to every school principal in the eligible areas. If you cannot locate the brochure, request an application from the office listed below.
Awards Given:	Each winning team receives a school enrichment grant of $7,000 from GTE to be used for a school project. Each member of a winning team receives a personal development grant of $2,500 to engage in an educational activity that the teacher believes will stimulate his or her professional growth and eventually affect achievement in the classroom.
Sponsors:	GIFT is sponsored and funded by the GTE Foundation on behalf of GTE Corporation and its domestic subsidiaries.
Contact:	Pat Etienne General Telephone of California One GTE Place Thousand Oaks, CA 91362-3811 (800) 251-4261 (805) 372-6640

Title:	**Industry Initiatives for Science and Mathematics Education**
Entry Deadline:	Applicants' materials must be submitted by mid-February.
Who Is Eligible?	Mathematics and science teachers may apply who have two or more years of experience at grades 9-12 in these seven counties: Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Santa Cruz.
Program Description:	During the summer, teachers work in meaningful industry jobs to gain firsthand knowledge of emerging technologies and to experience how the subject matter that they teach applies to a working environment. Teachers gain hands-on experience and knowledge about careers, company resources, educational opportunities, and state-of-the-art developments in technology. During the summer and throughout the school year, the Lawrence Hall of Science provides activities for teachers which encourage innovative interpretations and translations of the summer experience in the classroom to make mathematics and science more exciting, relevant, and valuable for students.
How to Enter:	Applications and more information about Industry Initiatives for Science and Mathematics Education (IISME) are available from either of the contacts listed below.
Benefits:	Teachers are paid $600 per week for eight weeks and establish networks of individuals who continue to provide assistance and encouragement in science activities.
Sponsors:	Thirty-five corporations were involved in 1985; and the figure continues to grow, enabling the program to increase the numbers of participating teachers.
Contact:	Kaye Storm IISME Program Director c/o Lockheed 0/90-01,B-253 3251 Hanover St. Palo Alto, CA 94304-1191 (415) 424-3311 or (415) 326-4800
	Gerri Ginsburg IISME Coordinator Education Research and Development Lawrence Hall of Science University of California Berkeley, CA 94720 (415) 326-4800

Title:	**National Science Foundation Grant Program**
Who Is Eligible?	Mathematics and science teachers in precollege programs are eligible.
Program Description:	The National Science Foundation (NSF) funds programs which provide teachers of K-12 students with opportunities to enrich and increase their science and mathematics knowledge. These programs are offered to teachers through various institutions around the state. All are considered to be model projects with the potential for adaptation and adoption in other settings. Concrete plans exist for building long-term relationships between the staff and the participating teachers and for promoting the formation of partnerships among teachers and administrators of all levels and with other educational and community agencies and resources. NSF-funded projects for teachers of K-12 students fall in these two categories: 1. Leadership activities. For teachers with strong mathematics and science backgrounds who may become leaders among their colleagues 2. Local/regional teacher development. For teachers who wish to update and deepen their science and mathematics knowledge and/or teaching methodology Each year a directory for precollege science and engineering programs is published. Write for it in care of the address given below. The number of the catalog of *Federal Domestic Assistance* is 47.063, Precollege Science and Mathematics Education.
How to Enter:	The Foundation encourages educators to submit a proposal to NSF for partial support. Write for the appropriate program announcements: ° 85-9 Division of Teacher Enhancement and Informal Science Education ° 85-10 Division of Materials Development and Research Send a self-addressed mailing label for each specified program announcement to the address given below.
Contact:	Directorate for Science and Engineering Education National Science Foundation Washington, DC 20550

Title:	**National Science Teachers Association Awards**
Entry Deadline:	The deadline for submitting entries is usually the beginning of December.
Who Is Eligible?	Science teachers of all levels and all members of the science teaching community may apply.
Program Description:	The awards programs presented by the National Science Teachers Association (NSTA) include:

- Science Teaching Achievement Recognition (STAR). These awards emphasize implementation, evaluation, and projections of a novel idea or improvement in science education at the elementary and secondary levels. The American Gas Association sponsors these awards.

- Gustav Ohaus Program for Innovations in Elementary and Secondary Science Teaching. This program encourages and honors a teacher who has had outstanding student performance in science at the elementary or secondary level. There is also a program for college science teaching. The Ohaus Scale Corporation sponsors this program.

- CIBA-GEIGY Exemplary Elementary School, Middle School, Junior High School, and High School Teaching. This program searches for teachers who have demonstrated exemplary science teaching performance. One elementary school, one middle school or junior high school, and one high school teacher are chosen. This program is sponsored by the CIBA-GEIGY Corporation.

- Citations for Distinguished Service to Science Education. This program recognizes an individual who has made extraordinary contributions to science education. The National Science Teachers Association is the sponsor.

- Distinguished Teaching Award. This program recognizes teachers who have made extraordinary contributions to science teaching. Elementary school, middle school, junior high school, high school, and college teachers are eligible. The National Science Teachers Association sponsors this event.

- *Science Screen Report.* This program recognizes a teacher who has creatively used commercially available films or videotapes to develop a unit or theme in science. *Science Screen Report*, Incorporated, sponsors this event.

- The Robert H. Carleton Award for National Leadership in the Field of Science Education. This award recognizes a member of NSTA who has made outstanding contributions to and provided leadership in science education at the national level. The National Science Teachers Association sponsors this award.

- Sheldon Exemplary Equipment and Facilities. Novel or exemplary new designs or approaches are sought involving science equipment and facilities. Teachers at elementary and secondary levels are eligible. Sheldon Laboratory Systems, Division of General Equipment Manufacturers, sponsors this award.

- Outstanding Elementary Science and Technology Award. One teacher is recognized who has demonstrated high performance in the use of supplementary materials in an exemplary manner, integrating science with other subjects. Elementary school teachers are eligible. *Science Weekly*, Incorporated, sponsors this award.

Awards Given: Major cash awards are offered in most of the programs; several programs also offer expense-paid trips to the NSTA national convention and one-year complimentary memberships in NSTA.

Sponsors: The awards are sponsored by various companies, organizations, and agencies and are presented by the National Science Teachers Association.

Contact: Request entry materials for the NSTA Awards Program and the "Be a Winner" awards brochure (which lists awards which are not judged by the Awards and Recognition Committee) at the following address:

NSTA Awards Programs
National Science Teachers Association
1742 Connecticut Avenue, NW
Washington, DC 20009

Title:	**Outstanding Biology Teacher Award**
Who Is Eligible?	Biology teachers of grades 9-12 are eligible.
Program Description:	The National Association of Biology Teachers recognizes outstanding teachers of biological science, who demonstrate exemplary teaching practices. Students, parents, administrators, and fellow teachers may nominate a biology teacher for the award. Letters of recommendation from three individuals are reviewed by a committee made up of a college-level biologist, an administrator, and a high school biology teacher.
Awards Given:	A certificate of recognition and a pair of binoculars are awarded.
Sponsors:	The National Association of Biology Teachers and Scott Foresman jointly sponsor the award.
Contact:	J. J. Olenchalk 1925 Ruby Drive Antioch, CA 94509 (415) 757-0203 (415) 757-6560 (message)

Title:	**Presidential Awards for Excellence in Science and Mathematics Teaching—National Science Foundation**
Entry Deadline:	Nominations are usually due early in March. Nominees then receive nomination packets, which are to be completed and returned within a given length of time.
Who Is Eligible?	Science and mathematics teachers of grades 7-12 who have at least five years teaching experience in mathematics or science may apply. (California elementary teachers [levels K-6] may apply for the Herb Strongin Award for Excellence in Elementary Science Teaching.)
Program Description:	The Presidential Awards program was established in 1983 by the National Science Foundation to identify outstanding middle school, junior high school, and high school teachers of science and mathematics who can serve as models for their colleagues. The goal of the program is to increase rewards and status for demonstrated professionalism, encouraging high-quality teachers to enter and remain in this field. The Herb Strongin Award honors an outstanding elementary teacher who uses creative and inexpensive process-centered activities in science lessons. The application is similar to the one used by secondary level teachers in the Presidential Awards program.
Awards:	Presidential Award Finalists receive an expense-paid trip to Washington, D.C., to be honored at an awards ceremony and receive a presidential citation as well as gifts and prizes from contributors from the private sector. The teacher's school is awarded a $7,500 grant from the National Science Foundation to be spent under the teacher's direction to supplement existing science or mathematics programs over a two-year period. An honors workshop allows the award winners to share their expertise with fellow awardees and national policymakers. The elementary awardee receives an all-expenses-paid week at the annual California Science Teachers Association and the National Science Supervisors Association summer conference and a $100 gift certificate to use for the purchase of classroom science materials.
Sponsors:	The National Science Foundation administers the program for the White House. The National Science Teachers Association is the primary contractor, coordinating with the National Council of Teachers of Mathematics and the Council of State Science Supervisors. Other support is given through the American Association of Physics Teachers, the American Chemical Society, National Association of Biology Teachers, the National Association of Geology Teachers, the National Academy of Sciences, and the American Association for the Advancement of Science.
Contact:	Thomas P. Sachse Mathematics and Science Education Unit California State Department of Education 721 Capitol Mall Mailing address: P. O. Box 944272 Sacramento, CA 94244-2720 (916) 324-7187

Title:	**The Teacher Achievement Award Program**
Entry Deadline:	Applicants' materials must be submitted by mid-February.
Who Is Eligible?	Full-time public and private secondary school (grades 7-12) mathematics and science teachers in California are eligible. Applicants must have a bachelor's degree and teaching certificate, must have taught full-time in grades 7-12 in the same school or school district for three years, must teach in the same school or school district during the next school year; and must receive a commitment of $2,500 in matching funds from their schools or school districts.
Program Description:	The Teacher Achievement Award Program (TAAP) provides opportunities for mathematics and science enhancement projects in grades 7-12 and for the professional development of teachers in these grades. Through TAAP and its network of professional mathematicians and scientists in institutions of higher education and in business and industry, teachers receive assistance in the design, development, and implementation of innovative and creative ideas for enriching the mathematics and science programs in their classrooms or schools. TAAP provides seed money for implementation of the school enhancement plan. TAAP also provides each teacher with an opportunity to study at a university of his or her choice and to engage in scientific research at a scientific laboratory. Teachers may receive support to attend professional meetings and conferences and to visit science centers, libraries, media centers, or other sources of professional growth.
How to Enter:	Teachers should request an application from the office listed below and return five copies of the completed forms to the same address. A phone number is listed for requesting an application or for assistance.
Awards Given:	For implementation of the school enhancement plan, each of the five teachers selected for an award will receive $2,500 (an amount which must be matched by the school, the school district, or other source) and an additional $2,500 for professional development activities. (No matching funds are required for this second amount.)
Sponsors:	TAAP is sponsored and funded by the California State University Foundation, which is supported by many private sources.
Contact:	Francis P. Collea Office of the Chancellor The California State University 400 Golden Shore Long Beach, CA 90802-4275 (213) 590-5779

B. Staff Development and Professional Growth

Staff development is of primary concern in science education. This section lists information pertinent to professional growth opportunities, ranging from summer institutes to classroom speakers, telelectures to museums, and more. This list is by no means complete, and teachers are encouraged to take advantage of other available resources as well.

Title:	**AIMS Foundation**
Locations:	Summer programs and other sessions are generally held on the Fresno Pacific College campus. Some sessions are held at Huntington Beach. Contact the individuals listed below regarding other sites which may be used.
Who Is Eligible?	Science, mathematics, and computer teachers from K-12 may apply.
Cost:	Preregistration with a deposit for the summer programs is required. The offerings are appropriate for the use of Education for Economic Security Act (PL 98-377) funds, minigrants, and similar funding. College credit is available. For more information please write or call Fresno Pacific College at the address given below.
Program Description:	Fresno Pacific College offers programs designed for elementary and secondary teachers, computer education teachers, curriculum coordinators, administrators, and teachers using computer software. In addition to graduate classes, in-service programs, and workshops held year-round, Fresno Pacific College presents summer programs, including the Festival of Mathematics, computer institutes, the Science Festival, Project AIMS (Activities that Integrate Mathematics and Science) workshops, and the Trainer of Teachers Program. Each program features excellent, highly motivating speakers; opportunities to interact with other interested teachers; and a wealth of challenging, innovative materials and activities ready for use in the classroom.
Sponsors:	Fresno Pacific College sponsors the programs. The AIMS Foundation administers Project AIMS. Schools are providing financial support for teachers to attend sessions through a variety of sources such as minigrants, PL 98-377 funds, and other resources.
Contacts:	For information contact: Arthur Wiebe or Judie Hillen Mathematics/Science Project Fresno Pacific College 1717 South Chestnut Avenue Fresno, CA 93702 (209) 453-2209 or (209) 251-7194
	To order materials, write to: AIMS Education Foundation P. O. Box 7766 Fresno, CA 93747

Title: **Ames Research Center—National Aeronautics and Space Administration**

Location: The National Aeronautics and Space Administration (NASA) Ames Research Center is located at the Moffett Field U.S. Naval Air Station off U.S. Highway 101 near Mountain View in the San Francisco Bay Area.

Who Is Eligible? Services and programs are available for public and private elementary schools and secondary schools, colleges, and universities.

Cost: No cost is charged for services; however, schools are requested to cover the cost of materials, speakers' expenses, and so forth.

Program Description: The Ames Research Center offers the following programs and services:

- Teachers' workshops. One-hour instructional resources programs after school and fifteen-hour accredited programs are available. Teachers may be certified to use lunar rock samples in the classroom after attending a two-hour lunar science certification course. A one-week workshop for teachers and administrators is hosted each summer at the Ames Research Center.

- Teachers' resource room. In the teachers' resource room at Ames, teachers may view instructional aids and may request copies of videotapes, 35 mm slides, publications, audiocassettes, teachers' guides, and classroom activities. Teachers are asked to furnish 35 mm film and videotapes. Call the educational officer in your area or (415) 694-6077.

- Teachers on the NASA mailing list receive copies of new educational publications and a quarterly newsletter, *Notes to Educators*. To be on the list, send your name and address to the Educational Programs Office. On written request teachers may order instructional kits and NASA publications free of charge.

Sponsor: The Ames Research Center is a tax-supported federal government laboratory.

Contacts:

For information about services in northern California, contact:

Garth A. Hull
Educational Programs Officer
(415) 694-5543

For information about services in southern California, contact:

B. Michael Donahoe
Educational Programs Officer
(415) 694-5544

Both programs' officers are located at:

Educational Programs Office
NASA-Ames Research Center
Moffett Field, CA 94035

Title:	**California Museum of Science and Industry**
Public Hours:	The museum is open every day from 10 a.m. to 5 p.m.
Location:	Covering 125 acres, the museum is located near the Los Angeles Coliseum.
Cost:	Admission is free. However, membership in the California Museum Foundation is encouraged. There is a charge for the IMAX Theater, which is open from 10 a.m. to 9 p.m.
Program Description:	A $55 million renovation of the museum has revitalized and tripled the size of a set of innovative exhibits. Visitors may interact with the exhibits and learn basic principles of science and technology. Four new structures are drawing visitors: the Aerospace Building, the Mitsubishi IMAX Theater, the Mark Taper Hall of Economics and Finance, and the Museum of Afro-American History and Culture. Additionally, the Corwin D. Denney Air and Space Garden displays numerous aircraft, including full-size commercial planes. The main exhibit area, Science Wing and Industry Hall, has new interactive computer exhibits.
Sponsors:	The state of California operates the museum. Additional funds are obtained from individuals and corporations through the nonprofit California Museum Foundation. For example, E.F. Hutton supports the EARTHQUAKE Exhibit, the largest earthquake simulator in the nation open to the public. Hanna-Barbera Productions created a Yogi Bear video, which teaches visitors how to behave during and after an earthquake to maximize their safety.
Contact:	California Museum of Science and Industry 700 State Drive Los Angeles, CA 90037 Information about the museum's activities may be obtained by calling the following numbers: (213) 744-7440 (Teacher Workshops and "Exploring Science on Saturday") (213) 744-7504 (Information on membership contributions and privileges) (213) 744-7400 (General Information) (213) 744-7437 (Education Office)

Title:	**Education for Economic Security Act—Title II** (Also called the Dwight D. Eisenhower Mathematics and Science Act)
Entry Deadline:	Applications are sent to schools in the fall, and a due date is announced at that time.
Who Is Eligible?	All public school districts are eligible for funds to provide staff development for teachers of mathematics and/or science.
Program Description:	Districts plan instruction in mathematics or science for K-12 staff members. The amount of the entitlement depends on the number of public and nonpublic K-12 students enrolled in the school district and on the Aid to Families with Dependent Children (AFDC) count in the attendance area.
How To Enter:	School districts apply to the Mathematics and Science Edcuation Unit of the California State Department of Education for funds to which they are entitled.
Sponsor:	Funds are distributed to states by the U. S. Department of Education.
Contact:	Gayland Jordan Mathematics and Science Education Unit California State Department of Education 721 Capitol Mall Mailing address: P. O. Box 944272 Sacramento, CA 94244-2720 (916) 324-7188

Title: **The Exploratorium**

Public Hours: The museum is closed on Mondays and Tuesdays.

Fall, winter, and spring hours are:

Wednesday, 1 p.m. to 9:30 p.m.
Thursday and Friday, 1 p.m. to 5 p.m.
Saturday and Sunday, 10 a.m. to 5 p.m.

The summer hours are:

Wednesday, 11 a.m. to 9:30 p.m.
Thursday and Friday, 11 a.m. to 5 p.m.
Saturday and Sunday, 10 a.m. to 5 p.m.

Admission: Admission is free for persons 17 years or younger, $2 for seniors and organized groups, and $4 for adults (any ticket is good for six months). Members are admitted free. Ample parking is available, and wheelchair access is provided.

Program Description: The Exploratorium is a museum for people of all ages and all levels of scientific understanding. Visitors can enjoy the natural phenomena that have been discovered by scientists or observed by artists. Children can use exhibits to demonstrate concepts to their parents or vice versa.

The Exploratorium staff recognizes the challenges, needs, and problems teachers face in providing motivating activities for their students. The Exploratorium is a significant resource for teachers' enrichment, providing a rich environment in which teachers may share current information, models, philosophies, and teaching goals with their colleagues and the Exploratorium's teaching staff. In addition to field trips where students and teachers may explore science and art exhibits, the Exploratorium offers teachers' institutes on weekends, after school, and during the summer; sessions for presenting papers; *Wavelength*, the newsletter of the Exploratorium teachers' institutes; and a selection of publications and teaching materials.

Location: The Exploratorium is located in the Palace of Fine Arts, close to Golden Gate Park, and across from the San Francisco Marina.

Sponsors: The Exploratorium has been funded by government agencies (for example, the city of San Francisco provides the space rent free and contributes about 6 percent of the annual budget). Private foundations, individual gifts, corporations, store income, and memberships are other sources of funds. Donations are always welcome.

Contact: Lynn Rankin (elementary schools)
Christina Orth (middle schools, junior high schools, and high schools)
The Exploratorium
3601 Lyon Street
San Francisco, CA 94123
(415) 563-7337

Title: **Lawrence Hall of Science**

Locations: Leadership institutes and teacher workshops are conducted in Berkeley at the Lawrence Hall of Science (LHS); workshops may be arranged at locations around the state. Please call the LHS for further information.

Who Is Eligible? Teachers of all levels and all interested individuals are eligible.

Cost: Generally, workshops are provided at no cost, and materials are provided at cost. Please contact the Lawrence Hall of Science for details.

Program Description: The Lawrence Hall of Science, set in the hills above the University of California, Berkeley, is a multipurpose educational facility. Hands-on, exploratory models and displays draw community groups, school groups, and the general public. Educators may attend informational workshops and in-depth seminars on projects developed by LHS staff members. Four projects co-sponsored by the LHS are:

1. The California Earthquake Education Project (CALEEP) provides teachers and community leaders with materials for earthquake education and preparedness. CALEEP materials fulfill compliance criteria for earthquake emergency procedures required by the California Legislature in Assembly Bill 2786 (1984), commonly called the "Katz Bill" (*Education Code* sections 35295, 35296, and 35297).

2. The Chemical Education for Public Understanding Project (CEPUP) integrates concepts and processes of chemistry with societal and environmental issues. CEPUP has two components: one for middle school or junior high school students and one for community groups. The CEPUP public information center includes a computer-based Chemical Information Center (*CHIC*), which is available to the public.

3. The Risk and Youth: Smoking Program (RAY:S) provides materials directed toward students in grades 6-8 to curtail their interest in smoking.

4. Science Activities for the Visually Impaired/Science Enrichment for Learners with Physical Handicaps (SAVI/SELPH) has been used effectively with all students in grades 1-10, although it was originally designed for students with disabilities. The program consists of nine modules with innovative, unique lessons for which materials, equipment, and instructional processes are provided.

Sponsors: LHS cooperates with industry, private foundations, the University of California, and other learning centers and institutions to develop its program exhibits and projects.

Contact: Herbert D. Thier, Associate Director
Lawrence Hall of Science
University of California
Berkeley, CA 94720
(415) 642-8718

Title: **Lawrence Livermore National Laboratory**

Location: Most programs are held at the Science Education Center in the Lawrence Livermore National Laboratory (LLNL). For information concerning workshops on and off the facility, contact the persons listed on the following page.

Who Is Eligible? Teachers of grades 1-12 are eligible. The center is available to San Francisco Bay Area teachers who wish to improve their knowledge of science and mathematics education. Your school may be eligible to receive help, because some services are available for teachers in schools located at distances exceeding 100 miles from the laboratory.

Cost: Information regarding costs may be obtained from the laboratory.

Program Description: Since its opening in 1984, the LLNL Science Education Center (SEC) has served as a major resource center, sharing laboratory expertise in science, mathematics, and computers with students and teachers. The SEC has a miniauditorium for demonstrations, lectures, and films; an experiment corner for hands-on scientific experiments; a resource library; and a dozen microcomputers. SEC programs include the following:

1. The Hands-on Experimental Lab Program (HELP) is designed for elementary school, middle school, and junior high school teachers to gain confidence and learn new science skills. This program is offered through the school year and during the summer.

2. Computer education offers classes, workshops, and self-guided tutorials on LOGO, BASIC, typing, and other programs for students, teachers, and other school personnel.

3. Traveling Science Lessons, which serves grades 1-12, offers presentations at schools on science topics.

4. Science on Site (SOS) is an in-service program for an entire elementary school, middle school, or junior high school staff. The focus is on helping teachers and administrators analyze their science teaching techniques, attitudes, and goals. Staff members also learn new methodology, integrating science into other subjects and improving science education in general.

5. The guest speaker series provides a wide range of topics tailored to the needs of the audience, providing current and relevant information about LLNL and applied science topics.

6. Summer Science Institute/Project HOPES (Helping Our Partners Enrich Science) offers an opportunity for elementary teachers to develop their own science lesson plans. During the four-week

course, the participants learn scientific concepts through lectures and experiments, practice methods of teaching science, and take related field trips. The teachers become expert resource specialists for the school and district, and they receive follow-up in-service instruction from the institute. The teachers' lessons are published and made available for distribution through the Science Education Center.

7. The *Science Education Center Report* is a monthly newsletter sent to teachers and students on SEC activities.

8. The tutorial program provides seventh grade through college level students with help in understanding science, mathematics, and computers.

Sponsors: The Lawrence Livermore National Laboratory is operated by the University of California for the U. S. Department of Energy. A grant from the National Science Foundation was awarded to the LLNL's Science Education Center to operate Project HOPES.

Contact:

Hector Timourian
Director of Science Programs
P. O. Box 808, L-793
Livermore, CA 94550
(415) 423-0556

Stephen Sesko
Associate Administrator
P. O. Box 808, L-793
Livermore, CA 94550
(415) 423-0556

Other Local Staff Development Resources

Other resources in the community which offer enrichment opportunities for students and teachers are local universities, large-scale museums, and science centers.

Many of the professional organizations for science educators sponsor local programs, workshops, and grants.

Utility companies have developed excellent educational materials for teachers and students, and they welcome the opportunity to share materials and information with the schools. Within your service area, contact:

Pacific Gas and Electric Company
Sylvia Hardy, Science Specialist
Educational Services
77 Beale Street, Room F 1500
San Francisco, CA 94106
(415) 972-3883

Sacramento Municipal Utility District (SMUD)
Polly Macias
6201 S Street
Sacramento, CA 95817-1899
(916) 732-5134

Southern California Edison Company
Tani R. Welsh
Director of Educational Services
P. O. Box 800
Rosemead, CA 91770
(818) 302-6231

Los Angeles Department of Water and Power
Walter S. Zeisel, A.P.R.
Senior Public Relations Representative
Public Affairs Division
Room 1509, 111 North Hope Street
Los Angeles, CA 90012
(213) 481-6357

Title:	**Technology in the Curriculum—Science Resource Guide**
Who Is Eligible?	Teachers from K-12 are eligible.
Cost:	Sets of the Technology in the Curriculum (TIC) projects were provided to every public school in California in 1986. Additional material and updates were produced in 1987. Complete sets, including the 1987 material, are available for $150, plus sales tax. A single volume, *Technology in the Curriculum Resource Guide 1988*, which was updated in 1988, is available for $3.50, plus sales tax. Contact the Bureau of Publications Sales, California State Department of Education, listed below.
Program Description:	The *Science Resource Guide* provides a wealth of resources to help teachers improve science education through the use of computers and instructional videos. The guide organizes information about computer and video programs which were available at the time of publication and keys each program to the *Science Framework Addendum for California Public Schools*, which was published in 1984. Model units with lesson plans are included for grade levels K-3, 3-6, 6-9, and 9-12. The TIC package consists of these resource guides: mathematics, science, history-social science, English-language arts, foreign languages, and visual and performing arts. Data disks correlating to the guides and documentation for *DataRelator*, the data base management system for the project, are also included.
Sponsors:	The resource guide was prepared under a grant from the California State Department of Education as part of Assembly Bill 803. Preparation of the resource guide was a collaborative effort of the Chemistry Education Project, Biology Education Project, and the Astronomy/Physics Education Project of the Lawrence Hall of Science.
Contact:	To purchase additional sets of TIC materials, contact: Bureau of Publications Sales California State Department of Education P. O. Box 271 Sacramento, CA 95802-0271 (916) 445-1261

C. Professional Affiliations

The professional affiliations listed in this guide are endorsed by the Mathematics and Science Education Unit as an excellent means for teachers to enrich and enhance their professional and personal lives. While most of these organizations are California branches, teachers are encouraged to obtain membership in associations at the local, regional, national, and international levels, which may offer support and encouragement for each individual's areas of expertise and interest in the sciences.

Title:	**American Association of Physics Teachers**
Who Is Eligible?	Physics teachers in secondary schools, colleges, and universities, as well as interested individuals may join.
Cost:	California educators may join two sections of the American Association of Physics Teachers (AAPT), as well as the national organization. Dues for the northern California section are $10 per year. The southern California section has a $5 annual membership fee to cover the cost of mailings. All interested persons are invited to attend section meetings whether or not they are members of the national organization. Dues for the national association vary according to which AAPT publications the member subscribes.
Program Description:	The American Association of Physics Teachers works to improve science teaching and the conditions under which it takes place. The California sections sponsor conferences, workshops, and in-service programs throughout the state. The national organization offers a summer institute which provides a professional development program for physics teachers to become resource specialists for their regions.
Sponsors:	Colleges and universities around the state support AAPT by donating meeting space for workshops and conferences.
Contact:	National Headquarters for AAPT: Office Hours: Monday through Wednesday—1 p.m. to 2 p.m. AAPT Business Office 5110 Roanoak Place, Suite 101 College Park, MD 20740 (301) 345-4200 The representative for the northern California section is: Scott Perry Physics Department American River College 4700 College Oak Drive Sacramento, CA 93407 (916) 484-8115 The representative for the southern California section is: Nick Brown Department of Physics California Polytechnic State University San Luis Obispo, CA 93407 (805) 756-2458 or 756-2448

Title:	**American Chemical Society**
Location:	The American Chemical Society (ACS) has nine sections throughout California: Sacramento, Santa Clara, southern California (based in Los Angeles), Orange County, San Gorgonio (based in San Bernardino), Mojave Desert (based in Bakersfield), San Joaquin Valley (based in Fresno), San Diego, and northern California (based in Berkeley and serving the upper Bay Area to the Oregon border). Please contact the individual listed below to find the person responsible for your area.
Who Is Eligible?	Individuals must join ACS to participate in activities offered by the association. Anyone may join as an affiliate. The minimum requirement for full membership is a bachelor's degree in chemistry or a related science.
Cost:	Dues of $85 per year enable members to receive the organization's weekly magazine, *Chemistry and Engineering News*, and to participate in nationwide conferences, short courses, and so forth.
Program Description:	ACS is the largest scientific organization in the world, with almost 150,000 members in the United States and over 12,000 members in California.
Contact:	Janan Hayes Cosumnes River College 8401 Center Parkway Sacramento, CA 95823 (916) 686-7204

Title:	**California Association of Chemistry Teachers**
Location:	Two statewide meetings of the California Association of Chemistry Teachers (CACT) are held in California each year (a summer meeting, usually held at University of California, Santa Cruz, and a mid-winter meeting in February, usually held during President's Weekend at various locations in central California). Each of the two sections, northern and southern California, meets two or three times per year in addition to the statewide meetings. A summer institute held at Mills College for high school chemistry teachers is sponsored by various organizations, including CACT.
Who Is Eligible?	Anyone involved in chemistry education at high school, community college, and university levels may join.
Cost:	Dues are approximately $12 per year.
Program Description:	CACT brings together people who have an interest in chemistry education and provides them an opportunity to share and become better instructors.
Sponsors:	Syntex Corporation provides funding for CACT conferences and high school scholarships. CACT has no affiliations with other groups, although some events are held in common with the American Chemical Society (ACS).
Contact:	Jack Healey CACT State President Chabot College-Valley Campus 3033 Collier Canyon Road Livermore, CA 94550 (415) 455-5300, Ext. 54

Title:	**California Energy Education Forum**
Location:	The California Energy Education Forum (CEEF) holds general membership meetings three times a year in various regions in the state.
Who Is Eligible?	Educators; representatives from government, the energy industry, and environmental groups; and producers of educational materials may join.
Cost:	Dues are $10 per year.
Program Description:	CEEF's purpose is to advance energy education in schools by bringing together representatives from the educational community, energy industry, government, environmental groups, and the community. The organization is a neutral forum for the exchange of ideas, neither endorsing particular products nor advocating a particular point of view. CEEF is a central source for obtaining up-to-date information about energy matters and energy education techniques and teaching materials.
Contact:	Secretary California Energy Education Forum c/o SMUD P. O. Box 15830, MS10 Sacramento, CA 95852-1830

Title: **California Science Teachers Association**

Who Is Eligible? Science teachers statewide at all educational levels, K-12 educators, college professors, science supervisors, curriculum and instruction directors, preservice teachers, and anyone interested in science education may join the California Science Teachers Association (CSTA).

Cost: Membership dues are $15 per year and entitle one to receive a quarterly CSTA journal, six issues of the CSTA newsletter, special publications, reduced rates at CSTA conferences, and liaison with the California State Department of Education, business, and industry.

Program Description: The goal of CSTA is the advancement, stimulation, extension, improvement, and coordination of science teaching in all fields of science. CSTA cosponsors several conferences per year with current and relevant speakers and topics. The *California Science Teacher's Journal* is the official publication of the association. Published quarterly, the *Journal* facilitates the communication of ideas between science educators through solicited articles which have direct classroom application or are related to the theory or philosophy of science teaching. The *CSTA Bulletin* is published once every two months and contains dates of meetings in California and other states, as well as matters of interest to science educators.

Sponsors: Several corporations sponsor CSTA through memberships by exhibiting at conferences and by contributing to the journal. Some of the sponsors offer awards to science teachers.

Contact: For information about membership contact:

Margaret Nicholson, Executive Director, or
Robert A. Rice, Director of the Science Service Office
CSTA
Lawrence Hall of Science
University of California
Berkeley, CA 94720
(415) 642-4155

To submit materials for publication contact:

Dave Stronk, Editor
Department of Teacher Education
California State University
Hayward, CA 94542
(415) 881-3028

Title:	**Central California Science Specialists Association**
Location:	Central California Science Specialists Association (CCSSA) holds monthly meetings, which are scheduled at various locations in central California and rotate among Madera, Fresno, and Visalia. Members are recruited from Stockton to Bakersfield, including San Luis Obispo County.
Who Is Eligible?	Persons eligible to join are administrators and teachers with responsibility for science education at any grade level, anyone in a science mentor or supervisory role, and individuals interested in promoting quality science supervision.
Cost:	No dues are required.
Program Description:	CCSSA provides a forum for science educators. Members share and disseminate current information in the field. Through environmental education grant funding, the organization offers a weekend environmental education fair each year. Every third year this organization hosts the National Science Supervisors Association state leadership conference. Each year CCSSA screens the Presidential Award candidates for central California.
Sponsors:	The organization is affiliated with the National Science Supervisors Association.
Contact:	Anne Gymer, Consultant Office of the Madera County Superintendent of Schools 28123 Avenue 14 Madera, CA 93638 (209) 673-6051

Title:	**Elementary School Science Association—Northern California**
Location:	Elementary School Science Association (ESSA) council meetings, which are held throughout northern California five times a year, are open to all members.
Who Is Eligible?	Anyone may join, including K-8 teachers, curriculum administrators, science specialists, and anyone interested in teaching science.
Cost:	Membership dues are $8 per year or $12 for two years.
Program Description:	ESSA offers two K-8 science conferences per year, with sites located in the greater Bay Area. Miniconferences and specialized field trips are organized through the organization. Council members are recruited from the entire service area, north to Eureka and Redding. A newsletter is published four times a year. Members receive discounts on conference fees and are entitled to apply for programs to improve science skills and classroom offerings.
Sponsors:	ESSA is an affiliate of the National Science Teachers Association.
Contact:	Gretchen Gillfillan 744 Coventry Road Kensington, CA 94707

Title:	**National Science Teachers Association**
Location:	Conferences are held nationally once a year at various locations throughout the United States. To find a contact person with schedules of local chapter meetings, call or write the person listed below.
Who Is Eligible?	Teachers of science at elementary school, middle school, junior high school, senior high school, college, and university levels may join.
Cost:	Dues are $35 per year. Membership includes a subscription to at least one journal geared to an appropriate grade level: *Science for Children* is for elementary schools; *Science Teacher* is for secondary schools; and *Journal for Science Teaching* is for college and university levels. *Science Scope* is available as a supplement. Excellent professional publications are available to members, and various types of memberships are offered.
Program Description:	The National Science Teachers Association (NSTA) is an affiliate of the American Association for the Advancement of Science. NSTA helps the classroom teacher in curriculum, professional development, legislation, and issues related to science education. Regional and national conferences are major events, and members are entitled to discounts on conference fees. Group benefit plans, educational tours, employment registry, awards programs for teachers and students, outstanding publications and yearbooks, and special projects for the improvement and enrichment of the science education community are additional benefits of membership in NSTA.
Sponsor:	NSTA works closely with industry, government, education, and business organizations, which contribute to the association through exhibiting at conferences, buying memberships, and contributing to the publications.
Contact:	Gary Nakagiri Office of the San Mateo County Superintendent of Schools 333 Main Street Redwood City, CA 94063 (415) 363-5458

Title:	**Northern California Science Education Specialists**
Location:	Meetings are scheduled in various locations in the Bay Area and northern California during months which have five Thursdays.
Who Is Eligible?	Persons eligible to join are science education specialists (including supervisors and department chairpersons), university science faculty, science museum staff, and science teachers.
Cost:	No dues are required.
Program Description:	Northern California Science Education Specialists (NCSES) members meet to network with others of interest and to discuss current and relevant issues, events, curriculum, and legislation regarding science education. A round-table forum is provided at meetings for members to share information, concerns, and successes in science education.
Sponsor:	NCSES is an affiliate of the National Science Teachers Association, California Science Teachers Association, and National Science Supervisors Association.
Contact:	Susan Douglas, Chairperson Education Department California Academy of Sciences Golden Gate Park San Francisco, CA 94118

Title:	**Southern California Association of Science Specialists**
Location:	Meetings are held at various sites in southern California.
Who Is Eligible?	Eligible for membership are persons who have a science interest; who are representatives from educational institutions, business, or industry; and who reside in Imperial, Kern, Los Angeles, Orange, Riverside, San Bernardino, Santa Barbara, San Diego, and Ventura counties.
Cost:	No dues are required.
Program Description:	Southern California Association of Science Specialists (SCASS) members meet to network with others of similar interests and to discuss current and relevant issues, events, curriculum, and legislation regarding science education. A round-table forum is provided at meetings as an opportunity for members to share information, concerns, and successes in science education.
Sponsor:	SCASS is an affiliate of the National Science Teachers Association, California Science Teachers Association, and National Science Supervisors Association.
Contact:	Vance Mills Basic Education Program Manager San Diego City Schools San Diego, CA 92103 (619) 293-8216 Forrest Miller Mathematics and Computers Office of the San Bernardino County Superintendent of Schools 601 North E Street San Bernardino, CA 92410-3093 (714) 383-2883

D. Search for Excellence in Science Education

Since 1983 programs from California schools have been nominated for recognition in the annual search for outstanding science programs. Each year programs selected as state finalists are used as models for other schools and are recommended for national consideration as exemplary programs.

Title:	**Search for Excellence in Science Education Program**
Deadline:	Announcements about the program are sent during the fall semester.
Who Is Eligible?	Descriptions of K-12 science programs which meet the specifications given in the announcement may be submitted.
Awards Given:	A certificate of recognition from the State Superintendent of Public Instruction is awarded; invitations are given to participate in science conferences, workshops, and committees; and the program is used as a model for visitation and consultation.
Program Description:	This annual search is conducted by the Council of State Science Supervisors to find outstanding science programs that may be used as models. Areas of the search change yearly. One state finalist from each area of the search is selected to be considered for national recognition by the National Science Teachers Association. The programs described on the following pages are previous years' award winners.
Sponsors:	National Science Teachers Association (NSTA) Council of State Science Supervisors (CSSS) National Science Supervisors Association (NSSA) California Science Teachers Association (CSTA)
Contact:	Zack Taylor Mathematics and Science Education Unit California State Department of Education 721 Capitol Mall Mailing address: P. O. Box 944272 Sacramento, CA 94244-2720 (916) 324-7189

Search for Excellence in Science Education Recipients, 1983

In 1983, the first year of the Search for Excellence in Science Education, applications were considered in three areas:

- Middle school or junior high school programs
- Science programs in a nonschool setting
- High school physics programs

Recipients of the award were:

Middle School or Junior High School

James B. Davidson Middle School
280 Woodland Avenue
San Rafael, CA 94901

Contact: Bob Vasser, Principal, (415) 457-0930

Intensive, year-long science courses are offered at each grade level.

Nonschool Setting

The Exploratorium
3601 Lyon Street
San Francisco, CA 94123

Contact: (415) 563-7337

Outstanding hands-on displays and experiments are presented, using students as guides for visiting groups.

Physics

Glendora High School
1600 East Foothill Boulevard
Glendora, CA 91740

Contact: Linda Huetinck, Physics Teacher, (818) 963-1611

This motivating program for students offers a modified open classroom approach using physics learning packets and computers, high-quality science fair projects, and a physics olympics.

Search for Excellence in Science Education Recipients, 1984

Fourteen state finalists were awarded recognition as exemplary science programs in California in 1984. The search for excellence in 1984 focused on:

- High school chemistry
- K-12 energy education
- Earth science

Chemistry

Saddleback High School
2802 South Flower
Santa Ana, CA 92707

Contact: James R. Grissom, Chemistry Teacher, (714) 752-8989

This outstanding program emphasizes the importance of chemistry for everyone and has strong ties with the elementary schools in the district.

Holy Family High School
400 East Lomita Avenue
Glendale, CA 91205

Contact: Sister Mary Margretine Smith, Principal, (818) 241-3178

The practical use of chemistry is emphasized in consumer chemistry for noncollege bound seniors.

Huntington Beach Union High School District
10251 Yorktown Avenue
Huntington Beach, CA 92646

Contact: May Ann Church, Mathematics/Science Teacher, (714) 964-3339

This districtwide program for six high schools has a common science core curriculum.

Suzanne Middle School
525 Suzanne Road
Walnut, CA 91789

Contact: Jane Gawronski, Assistant Superintendent, (714) 594-1657

This introductory chemistry class is an integral component of the overall approach to physics and chemistry.

Torrey Pines High School
Box 4140
4140 Black Mountain Road
Del Mar, CA 92014

Contact: Shirley E. Richardson, Science Teacher, (619) 755-0125, Ext. 248

Courses are offered to students at three levels, which use the Individualized Science Instructional System (ISIS), Interdisciplinary Approach to Chemistry (IAC), and the CHEM Study materials.

Earth Science

College Park High School
201 Viking Drive
Pleasant Hill, CA 94523

Contact: Robert M. Nanney, Mathematics/Science Chairperson, (415) 682-7670

This program is a nontraditional activity approach to high school earth science.

Rosedale Elementary School
12463 Rosedale Highway
Bakersfield, CA 93312

Contact: (805) 589-2571

Seventh and eighth grade junior scientists taught earth science to elementary students. (This program is no longer in operation at this school.)

Saddleback High School
2802 South Flower
Santa Ana, CA 92707

Contact: David Lindahl, (714) 558-5741

This highly imaginative integration of earth, life, and physical sciences uses simulations that are relevant to students' lives.

Sierra Joint Union High School
33326 N. Lodge Road
Tollhouse, CA 93667

Contact: Carole Phillips, (209) 855-8311

This learn-by-doing forestry program integrates life and earth sciences with meaningful projects.

Toll Junior High School
700 Glenwood Road
Glendale, CA 91202

Contact: Richard Pack, (818) 244-8414

Laboratory and field investigations are used in an activity-oriented approach to earth science.

Energy Education

Sunset High School
22100 Princeton Street
Hayward, CA 94541

Contact: Neil Joergensen or Steve Bower, (415) 784-2570 or (415) 784-2600

The Sunset Energy Education Center, designed and built by students, houses their working models and displays and is the center for hands-on experiences in energy research, conservation, and development.

Lone Hill Intermediate
115 West Allen Avenue
San Dimas, CA 91773

Contact: Diane Overin, Dean of Administrative and Student Services, (714) 599-6787

Students participate in all aspects of the process of developing an energy conservation handbook.

Paramount Unified School District
15110 California Avenue
Paramount, CA 90723-4378

Contact: Katie B. Barak, Director of Curriculum Services, (213) 602-6000

This creative interdisciplinary K-12 program involves decision making related to energy use.

San Diego Unified School District
4100 Normal Street
San Diego, CA 92103

Contact: Vance Mills, Mathematics/Science Specialist, (619) 298-8216

Interdisciplinary units for K-12 develop students' long-term values and attitudes.

Search for Excellence in Science Education Recipients, 1985

The search for excellence in 1985 concentrated on K-6 science education.

K-6 Science

Turner Elementary School
5218 East Clay Avenue
Fresno, CA 93727

Contact: Leonard V. Ross, Principal, (209) 441-3159

Students in levels K-6 maintain and harvest garden plots; study weather, soils, plants, and animals in outdoor science learning stations; and attend lessons with follow-up activities at the environmental education center.

Aloha Elementary School
11737 East 214th Street
Lakewood, CA 90715

Contact: Decla Johnson, Principal, (213) 924-8329

Students, teachers, and community members work together to develop students' decision-making and science process skills.

Ronald E. McNair Elementary School (formerly, El Segundo Elementary School)
1450 West El Segundo Boulevard
Compton, CA 90222

Contact: Charles Barnett, Principal, (213) 635-7595

Students gather, prepare, classify, and maintain specimens in a school laboratory and museum.

Las Virgenes Unified School District
30961 West Agoura Road, Suite 100
Westlake Village, CA 91361

Contact: Albert D. Marley, Superintendent, (818) 889-4004

Concepts from the *Science Framework Addendum for California Public Schools*, with hands-on investigations, are integrated throughout the K-6 curriculum.

Liberty Elementary School
170 Liberty Road
Petaluma, CA 94952

Contact: Monica Fagan, Superintendent, or Sherry Wright, Teacher, (707) 795-4380

This program, which shows how science touches every part of our lives, is designed to make science relevant in this small rural school district.

Marengo Elementary School
1400 Marengo Avenue
South Pasadena, CA 91030

Contact: Linda Bornheimer, Science Consultant, (818) 441-5750

Science process skills and divergent thinking are at the core of this hands-on science program.

Pacific Elementary School
P. O. Box H
Davenport, CA 95017

Contact: Stephanie Raugust, Nutrition Coordinator, (408) 425-7002

The Food Lab Program combines science and nutrition with gardening and economics, problem-solving skills, and good health habits.

Search for Excellence in Science Education Recipients, 1986

The 1986 search was conducted in these areas:

- Environmental education, K-12
- Science, technology, and society revisited, K-12

Environmental Education

Kimbark Elementary School
18021 Kenwood Avenue
San Bernardino, CA 92407

Contact: Zoneth Overbey, Principal, (714) 887-6429

The Kimbark Environmental Education Program (KEEP) offers outdoor experiences in conjunction with an interdisciplinary approach to give students a cognitive and affective basis for making life-style decisions involving the environment.

Alice Birney Elementary School
South Avenue and Prospect Street
Eureka, CA 95501

Contact: Jeff Self, Science Resource Teacher, (707) 443-0861, Ext. 310

The main focus of this well-balanced program is a hands-on, content-based science/environmental curriculum combined with instruction about Humboldt County history.

Los Angeles Unified School District
450 North Grand Avenue
Los Angeles, CA 90012

Contact: Lorna Round, Associate Superintendent, Instruction, or Sid Sitkoff, Elementary Science Specialist, (213) 625-6419

Several district science centers have been established to provide coordination of science and environmental education.

McKinley Elementary School
1425 Manley Drive
San Gabriel, CA 91776

Contact: Susan Crum, Principal, (818) 288-6681

Fifth grade students use science processes and thinking skills in four day-long field trips to local wildlife preserves.

Palm Desert Middle School
74-200 Rutledge Way
Palm Desert, CA 92260

Contact: Robert L. Orchard, Mentor Teacher, (619) 568-1859

A talented team of science teachers designed and implemented this highly motivating program, promoting the mastery of integrated scientific and environmental literacy.

John A. Rowland High School
2000 South Otterbein Avenue
Rowland Heights, CA 91748

Contact: Raleigh Philp, Science Department Chairman, (818) 965-3448

This structured, extensive field investigation combines earth, life, and physical science concepts, challenging students to pursue excellence.

Science, Technology, and Society

Vista Verde Elementary School
5144 Michelson Road
Irvine, CA 92715

Contact: Barbara Barnes, Principal, (714) 786-9207

This innovative program integrates science and technology throughout the K-8 curriculum, focusing on a hands-on approach using laboratory materials, textbooks, scientific investigative methods, and community resources.

Search for Excellence in Science Education Recipients, 1987

The areas of the search for 1987 were:

- Biology programs, 7-12
- Science supervision programs, K-12

Biology Programs, 7-12

Bullard High School
5445 North Palm Avenue
Fresno, CA 93704

Contact: Tim Thomas, Science Teacher, (209) 441-3666

This innovative program incorporates computer programs and the scientific process in activities emphasizing biological themes.

Huntington Beach Union High School District
10251 Yorktown Avenue
Huntington Beach, CA 92646

Contact: Julie Mayer, Science Teacher, (714) 964-3339

A team of district teachers wrote a course of study aligned with the state guidelines for the biology program, emphasizing skill development, processing skills, and the ethical concerns of science and scientists.

Lincoln High School
6844 Alexandria Place
Stockton, CA 95207

Contact: Stan Carson, Science Teacher, (209) 473-5520

This team-taught, college preparatory course uses the *Biological Science Curriculum Study (BSCS) Green Version* as background information and reference textbook in process-oriented units of individual laboratory exercises and outdoor field study.

Los Angeles Unified School District
Office of Instruction, A-319
450 N. Grand Avenue
Los Angeles, CA 90012

Contact: Sid Sitkoff, Elementary Science Specialist, (213) 625-6419

This investigative, problem-solving approach in Project Polar Regions uses students' critical thinking skills and processes in a science-social studies project.

North Hollywood Senior High School
Zoo Magnet Center
5231 Colfax Avenue
North Hollywood, CA 91601

Contact: Angela Reuser, Principal, (213) 769-8510, Ext. 7

Students in grades 10-12 attend classes at the magnet center's Los Angeles Zoo site, participating in hands-on learning experiences behind the scenes and in on-site classrooms.

Science Supervision Programs, K-12

Fresno Unified School District
Tulare and M Streets
Fresno, CA 93721

Contact: Garland Johnson, Coordinator, Science 7-12, (209) 441-3641

This districtwide program provides support, motivation, and instruction for teachers through opportunities to determine objectives and goals, develop long-range plans, and share and learn about content and processes in the science curriculum.

San Juan Unified School District
3738 Walnut Avenue
Mailing address:
P. O. Box 477
Carmichael, CA 95607-0477

Contact: Lynda Holmes, Director, 7-12 Schools, (916) 971-7130

Teachers of all grade levels benefit from a wide range of resources, services, and opportunities for their classroom teaching and for their personal and professional growth through an exceptional program for effective science teaching.

SIRC Project
Evergreen School
19415 Hooker Creek Road
Cottonwood, CA 96022

Contact: Cathy Klinesteker, Project Director, (916) 527-1810

Science Inservice for Rural California (SIRC), through the Lawrence Hall of Science, provides in-service workshops and follow-up guidance for teachers, science resource specialists, and administrators over a three-year period.

Search for Excellence in Science Education Recipients, 1988

The areas of the search for 1988 were:

- Districtwide elementary science programs, K-6
- Physical science programs

Districtwide Elementary Science Programs, K-6

Auburn Union Elementary School District
1225 Lincoln Way, Room 3
Auburn, CA 95603

Contact: Robert Gloyd, Science Mentor Teacher, (916) 885-7242

This exciting, comprehensive hands-on program provides a balance among earth, life, and physical science activities. A unique feature is four expert consultants who assist the classroom teachers in obtaining materials for lessons; making charts, graphs, and other aids; setting up labs; and collecting, sorting, and storing materials in the district's central science storage area.

Desert Sands Unified School District
82-879 Highway 111
Indio, CA 92201

Contact: Marcile K. Wright, Assistant Superintendent, Educational Services, (619) 347-8631

The main goal of this program is scientific literacy for all children. The program includes five major strands: life, earth/space, physical, health, and technology. Every lesson involves the use of process skills. Lead school site science teachers and district mentors provide the delivery system.

Encinitas Union Elementary School District
189 Union Street
Encinitas, CA 92024

Contact: David Philips, Assistant Superintendent, Curriculum, (619) 944-4308

This comprehensive K-6 program combines earth, space, life, and physical sciences in spiraling strands. A wide range of concepts, including those about ocean and mountain environments, are presented. The district's advisory group develops expectancies that include understanding concepts, hands-on experiments, field trips, problem-solving techniques, and independent projects.

Eureka City Elementary School District
3200 Walford Avenue
Eureka, CA 95501

Contact: Jeff Self, Resource Teacher, (707) 443-0861, Ext. 217

This program is an example of how to go from a reading comprehension science curriculum to one that is content-based and process-oriented. Change has occurred because of teacher in-service programs during school hours, teachers' sense of ownership of lesson plans, and financial support by the district.

One interesting component of the program is the Eureka Elementary School District's one-of-a-kind elementary model fish hatchery.

Fresno Unified School District
Tulare and M Streets
Fresno, CA 93721

Contact: Shirley Mercier, Coordinator, Health/Science Office, (209) 441-3000

The district's goal for its science program is science literacy for all students. Six elementary science specialists teach and support all classroom teachers in the district. The specialists model hands-on learning in the classrooms with students and show teachers how to weave science experiences into mathematics, art, music, and language arts instruction.

Irvine Unified School District
5050 Barranca Parkway
Irvine, CA 92713

Contact: Dorothy Terman, Curriculum Coordinator, (714) 651-0444, Ext. 230

In this program all students in grades 4-6 receive 100 minutes of science instruction per week, taught by science specialists. The specialists have developed an articulated series of hands-on units which emphasize both content and process. The program has brought about significant improvements in the quality and quantity of science instruction, increased scientific literacy, and enthusiasm for science.

Los Angeles Unified School District
450 N. Grand Avenue, Room A-319
Los Angeles, CA 90012

Contact: Sid Sitkoff, Elementary Science Specialist, Office of Instruction, (213) 625-6419

The purpose of Developing Oral and Written English Skills Through Science (DOES) is to improve science achievement and language arts skills. This purpose is accomplished by directly involving students in highly motivational science program activities. Results from criterion-referenced tests indicate that this interdisciplinary approach has shown significant gains over traditional approaches.

Region C Administrative Offices
Los Angeles Unified School District
6519 Eighth Avenue
Los Angeles, CA 90043

Contact: Cecilia Costas, Director, Instruction Division, (213) 753-4551

The comprehensive approach of Target Science stresses the involvement of the entire community in science education. The program offers unique benefits to a wide variety of participants: teachers; parents; students; and representatives from industry, science and cultural institutions, and universities.

New Haven Unified School District
34200 Alvarado-Niles Road
Union City, CA 94587

Contact: Susan Speakman, Director, Curriculum Development, (415) 471-1100

This exemplary program is designed to promote student participation in science. The hands-on approach helps students discover the uncertainties of science as well as its applications. In addition to the standard content and process areas, societal issues such as animal rights, ecology, and pollution are addressed. The latest materials from NASA and the Lawrence Hall of Science are used. Science instruction is a priority in this district. The community recently passed a bond issue to build permanent science classrooms at each elementary school site.

Poway Unified School District
13626 Twin Peaks Road
Poway, CA 92064-3098

Contact: Romeo Camozzi, Jr., Assistant Superintendent, Instruction, (619) 748-0010

This K-5 program provides balanced instruction in earth and space, life, and physical sciences. Goals are clearly defined in the district's scope and sequence plan that teachers developed. The program provides exciting hands-on experiences emphasizing scientific methods and active investigation. Teachers are active in professional organizations and take advantage of a wide variety of programs such as mentor teacher grants and two special Poway Unified School District grants: Program Improvement Plan-Teacher Improvement Plan (PIP-TIP) and Teachers' Good Ideas Funding (TGIF). Currently, five science mentor teachers and fifteen classroom teachers have developed innovative science programs.

San Luis Coastal Unified School District
1499 San Luis Drive
San Luis Obispo, CA 93401

Contact: Barry Pendley, Teacher, (805) 543-2010, Ext. 276

This program is the result of a commitment to change the study of science from being limited to book learning. This district now has a complete curriculum with grade-specific objectives (K-6); science kits that provide teachers with lesson plans, activities, and materials; and an in-service program offered by high school staff to provide elementary teachers with additional instruction.

Santa Cruz City Schools
133 Mission Street
Santa Cruz, CA 95060

Contact: Paula Cole, Coordinator, Media Services Office, (408) 429-3806

The goals of this program are to promote direct student involvement in learning, to provide a process-oriented approach to science instruction, to develop positive attitudes toward science, and to promote the use of the scientific method. Kits have been developed for each grade level to meet these goals. The kits are complete in that they contain activities, resource materials, and evaluation components.

San Diego City Unified School District
Education Center
4100 Normal Street
San Diego, CA 92103

Contact: H. Vance Mills, Basic Education Program Manager, (619) 298-8216

This program, which began in the 1986-87 school year, has transformed disparate science activities into a highly structured, well-organized, and extensively funded K-6 science program. Each classroom now has a science kit stocked with materials for hands-on experiences appropriate for the age level. Another aspect of this program is that two teachers from each school and every principal have been required to participate in staff development activities. The district has committed $100,000 for new audio materials for science.

Physical Science Programs

Clovis West High School
1070 E. Teague Avenue
Fresno, CA 93710

Contact: Wayne Garabedian, (209) 431-6600

In this continuous, activity-based science curriculum for grades 7-12, students learn both rational and intuitive thinking inherent in science inquiry and problem solving.

Mt. Carmel High School
9550 Carmel Mountain Road
San Diego, CA 92129-2799

Contact: Sandra D. Johnson, Principal, (619) 484-1180

The goal is for students to learn about the laws of nature by discovering them through carefully guided laboratory experiences.

Troy High School
2200 E. Dorothy Lane
Fullerton, CA 92631

Contact: Jackie Reedy, Director, (714) 870-3604

This high tech magnet program provides high technology, science, and mathematics instruction for talented students. The focus is on the integration of science and technology. Pre-internship and senior internship programs are offered. This program provides options for university-bound students and those looking for immediate employment.

Green (E.O.) Elementary School
3739 South C Street
Oxnard, CA 93033

Contact: Richard Miller, Assistant Superintendent, Educational Services, (805) 488-3588

Individual instruction, small-group or large-group instruction, and curriculum have been totally integrated with available technology in this high-tech program. The teacher is the facilitator-instructor, and technology is the instructional delivery system.

Crocker Middle School
2600 Ralston Avenue
Hillsborough, CA 94010

Contact: Marilyn Loushin-Miller, Principal, (415) 342-6331

Students spend most of their time in three well-equipped laboratories, working in teams to solve problems and conduct experiments, while their instructors circulate and facilitate by supervising, answering questions, and giving advice. Learning contracts are used, and students move at their own pace. Students learn about science concepts by using a hands-on inductive approach that brings abstract scientific principles to life.

E. Programs and Projects

Many opportunities are available for science teachers to enrich their curriculum with supplementary materials. This section lists a sampling of the many projects and programs available which show promise in benefiting teachers of science.

Title:	**California Earthquake Education Project**
Location:	Workshops may be arranged at locations around the state. Please call the Lawrence Hall of Science (LHS) for further information.
Who Is Eligible?	Teachers of all levels and all interested individuals are eligible.
Cost:	Generally, workshops are provided at no cost, and materials are provided at cost. Please contact the Lawrence Hall of Science for details.
Program Description:	The California Earthquake Education Project (CALEEP) is designed to provide teachers and community leaders with materials for earthquake education and preparedness for use with a wide range of grade levels. The motivating activities intrigue students to discover and improve their E.Q. (Earthquake Quotient), learn about earth science concepts, and practice prevention and safety techniques. CALEEP materials fulfill compliance criteria for earthquake emergency procedures required by the California legislature in Assembly Bill 2786 (1984), commonly called the "Katz Bill" (*Education Code* sections 35295, 35296, and 35297).
Sponsors:	CALEEP is a cooperative effort between the LHS and the California State Seismic Safety Commission.
Contact:	Herbert D. Thier, Project Director Sandra Cherkassky, Program Coordinator Vivian Gratton, Curriculum Developer Lawrence Hall of Science University of California Berkeley, CA 94720 (415) 642-8718

Title:	**Chemical Education for Public Understanding Project**
Who Is Eligible?	Teachers of all levels and all interested individuals are eligible.
Cost:	Generally, workshops are provided at no cost, and materials are provided at cost. Please contact the Lawrence Hall of Science (LHS) for details.
Program Description:	The Chemical Education for Public Understanding Project (CEPUP) integrates the concepts and processes of chemistry with societal and environmental issues. CEPUP has two components: one is targeted toward middle school and junior high school students and the other centers on community groups. The CEPUP Public Information Center includes a computer-based Chemical Information Center (*CHIC*), which is available to the general public. The goal of CEPUP is to help individuals to learn about chemicals and their use in the environment and to help a scientifically literate citizenry to make effective decisions about issues regarding chemicals.
Sponsors:	CEPUP is jointly funded by contributions from industry, private foundations, and the University of California.
Locations:	Leadership institutes and teacher workshops are conducted in Berkeley at the Lawrence Hall of Science. Workshops may be arranged at locations around the state. Please call the LHS for further information.
Contacts:	Herbert D. Thier, Project Director Joseph E. Davis, Assistant Project Director Elana C. Reinin, Curriculum Developer Lawrence Hall of Science University of California Berkeley, CA 94720 (415) 642-8718

Title: **The CLASS Project—Conservation Learning Activities for Science and Social Studies**

Who Is Eligible? The emphasis is at the middle grades. The program can be adapted for grades 5-12 and alternative high school programs.

Cost: A binder, which contains more than 30 activities, costs approximately $30.

Program Description: The CLASS Project was designed to help teachers integrate environmental education with social studies, science, language arts, and mathematics in the middle school and junior high school curriculum, using a cooperative learning format and an investigative hands-on approach to learning in the classroom and on the school grounds.

The project offers activities which develop critical thinking skills and an understanding of the science processes necessary for involvement in community conservation projects. The project also provides encouragement and direction for classes to initiate environmental projects in their local areas. Attendance at a workshop of six hours is required to familiarize educators with the CLASS Project and to provide a demonstration of how the materials can be used effectively with the students.

Students may receive recognition from the National Wildlife Federation for participating in community improvement projects, thereby becoming part of a nationwide network of CLASS Project Conservation Classrooms.

Sponsors: The CLASS Project was originally developed and published by the National Wildlife Federation through a grant from the National Science Foundation. The 1988 California version was made possible through the cooperative efforts of the Mobil Foundation, the State Department of Education, the National Wildlife Federation, and the Office of the Orange County Superintendent of Schools.

Contact: The CLASS Project
c/o Nina J. Winn
Administrator, Curriculum/Instruction Unit
Office of the Orange County Superintendent of Schools
200 Kalmus Dr.
Mailing address:
P. O. Box 9050
Costa Mesa, CA 92628-9050
(714) 966-4367

Title: **Environmental Education Guides**

Program Description: The following environmental education guides provide a framework for developing an interdisciplinary environmental education program:

- *California State Environmental Education Guide: A Curriculum Guide for Kindergarten Through Grade Six*. Hayward: Office of the Alameda County Superintendent of Schools, 1988.

- *Environmental Education Guide*. 4 vols. Hayward: Office of the Alameda County Superintendent of Schools, 1981. (The four volumes cover levels K-3, 4-6, 7-9, and 10-12.)

These guides show how to infuse environmental education throughout the K-12 curriculum in accordance with the county superintendent of schools' *Course of Study*.

These publications cover basic program information, provide sample learning activities appropriate to the stated grade levels, and list and describe materials available from various state agencies. The guides are widely used throughout California, the United States, and other countries.

Cost: The 1988 *Guide* is available for $17.95 plus tax and shipping, and the 1981 edition is available for $7. Both may be ordered from the Office of the Alameda County Superintendent of Schools.

Sponsors: The Office of the Alameda County Superintendent of Schools, in cooperation with the California State Department of Education, prepared and published these guides.

Contact: They may be purchased from:

Office of the Alameda County Superintendent of Schools
313 W. Winton Avenue
Hayward, CA 94544-1198
Attn: Publications Department

Title:	**Environmental Education Resource Centers**
Locations:	The resource centers are located at the California state universities at Hayward and San Bernardino.
Who Is Eligible?	The centers, which house collections of materials for K-12, are accessible to preservice teachers, professional educators, and other interested persons.
Cost:	The materials are available free of charge.
Program Description:	Two universities operate environmental education resources centers. California State University, Hayward, serves northern California, while California State University, San Bernardino, serves southern California.
Sponsors:	The universities contribute space, facilities, security, equipment, and some personnel. State funding from the sale of California personalized license plates is used for needed supplies and part-time student help. Additional support is given by a number of school districts, county offices of education, private industries, and resource management agencies.
Contacts:	Ester Railton California State University, Hayward 25800 Carlos Bee Blvd. Hayward, CA 94542 (415) 881-3000
	Darlene Stoner California State Uuniversity, San Bernardino 5500 University Pkwy. San Bernardino, CA 92407-2397 (714) 867-7571

Title:	**The Green Box**
Locations:	Please contact the individual listed below for information on workshop locations.
Who Is Eligible?	Teachers in grades 4-6 are eligible.
Cost:	The cost is approximately $40.
Program Description:	The Green Box is an environmental education activity card package, which was developed by the Office of the Humboldt County Superintendent of Schools for use in upper elementary grades. A statewide implementation program will be offered to strengthen the skills of teachers who have used the materials before and to introduce the Green Box to teachers who have not used it before.
Sponsors:	The Green Box was originally funded through a Title IV grant and was subsequently developed through several California license plate grants for environmental education.
Contact:	Mark Raney Office of the Humboldt County Superintendent of Schools 901 Myrtle Avenue Eureka, CA 95501 (707) 445-5411 or 445-7030

Title:	**Mathematics/Science Nucleus**
Location:	The program is transferable for duplication at any school site. While most teacher preparation is centered in the San Francisco Bay Area, workshops and in-service instruction may be requested at school sites outside this area, depending on the number of participants.
Who Is Eligible?	Any interested school may contact the Mathematics/Science Nucleus about its programs. Elementary schools with large enrollments of minority students are given priority.
Cost:	Please contact the Mathematics/Science Nucleus for details.
Program Description:	The Mathematics/Science Nucleus offers the I. Science Mate Program (Integrating Science, Mathematics, and Technology). This 34-week (one year) program for K-6 covers all areas of science using hands-on experiences. The Nucleus also offers in-service programs, workshops, speakers, and science products to elementary schools. Proceeds from the sale of the science products go toward science centers at schools which adopt the program.
Sponsors:	The Mathematics/Science Nucleus is a nonprofit organization. The U.S. Geological Survey was instrumental in developing the program and the science laboratories, contributing materials and personnel.
Contact:	Angela V. Montez, Director Mathematics/Science Nucleus 3710 Yale Way Fremont, CA 94538 (415) 490-MATH

Title:	**National Diffusion Network**
Locations:	State facilitator centers are located in each state, Washington, D.C., Puerto Rico, and the Virgin Islands. Demonstration schools are located across the country. When a school adopts a program, the state facilitator arranges for the program's developer to provide in-service programs at the adopting school site.
Who Is Eligible?	Educational programs are available for schools, colleges, and other institutions, serving students preschool through adult.
Cost:	All National Diffusion Network (NDN) services are provided at little or no cost to the schools which adopt the programs. Schools cover the cost of expenses for in-service programs for teachers. Schools requiring financial assistance to adopt an NDN program should check with the state facilitator for possible funding sources.
Program Description:	The National Diffusion Network supports the development, adoption, and implementation of exemplary educational programs throughout the United States. NDN exemplary programs in science include: Conservation for Children, grades 1-6 Foundational Approaches in Science Teaching (FAST), grade 7 Geology Is, grades 9-12 Informal Science Study, grades 5-12 Life Lab Science Program, grades 2-6 Marine Science: FOR SEA, levels K-6, grades 7-12 Project CHOICE, levels K-12 Project Sci-Math, grades 7-12 Project Starwalk, grades 3 and 5 San Jose Nutrition Education Program, levels K-4 A catalogue of descriptions and information about NDN programs, *Educational Programs That Work*, is available for $8.50, including tax and shipping, from the following address: Attention: Debra Kaiser California Facilitator Project c/o Association of California School Administrators 1575 Old Bayshore Highway Burlingame, CA 94010
Sponsors:	The National Diffusion Network is federally funded through the U.S. Department of Education.
Contact:	Joyce Lazzeri California Facilitator Project c/o Association of California School Administrators 1575 Old Bayshore Highway Burlingame, CA 94010 (415) 692-2956 1-800-672-3494

Title: **Project AIMS—Activities That Integrate Mathematics and Science**

Locations: The AIMS materials may be ordered through the AIMS Education Foundation. Workshops are conducted statewide and nationwide, as well as on the Fresno Pacific College campus. Contact the Mathematics and Science Project for further information.

Who Is Eligible? Teachers at levels K-9 are eligible.

Cost: The cost is approximately $10.95 per AIMS book. Workshops and various materials are available. For further information contact the individuals listed below.

Program Description: The AIMS Foundation has developed a program integrating mathematics, science, social studies, and language arts in response to the national need and demand for upgrading science and mathematics education.

Fresno Pacific College offers thorough instruction in the approach, content, and methodology of the AIMS materials, which include books for levels K-4 and 5-9, consisting of teachers' guides and students' work sheets; the science poster series and the mathematics poster series; Project SETUP (Software Evaluation and Teaching Utilities Project) books; the AIMS laboratories, the basic equipment needed for the AIMS investigations; and the *AIMS Newsletter*, a publication of the AIMS Education Foundation. In addition, the AIMS Foundation conducts an on-going process in which writing teams made up of educators develop lessons for new AIMS books.

Sponsors: Fresno Pacific College, through a National Science Foundation grant, originally sponsored Project AIMS, offering graduate credit to teachers to serve on writing teams to develop the AIMS materials. The AIMS Foundation, a nonprofit organization, administers the project. Proceeds from the sale of the AIMS books provide scholarships for teachers and the continuing publication of new materials.

Contacts:

For information contact:

Arthur Wiebe or
Judith Hillen
Mathematics/Science Project
Fresno Pacific College
1717 Chestnut Avenue
Fresno, CA 93702
(209) 453-2209 or 251-7194

To order materials write to:

AIMS Education Foundation
P. O. Box 7766
Fresno, CA 93747

Title:	**Project HOPES—Helping Our Partners Enrich Science**
Locations:	Project HOPES is part of the Summer Science Institute held at the Lawrence Livermore National Laboratory Science Education Center. To obtain maps and directions, contact the office listed below.
Who Is Eligible?	Elementary school, middle school, and junior high school teachers are eligible.
Cost:	Participants receive a stipend and travel expenses. University credit is available.
Program Description:	The focus of Project HOPES is to educate teachers during a four-week period in basic science experiences, providing background information, a model lesson format using the hands-on discovery approach, science-oriented field trips, and topical seminars conducted by content specialists. During the summer institute the participants develop lesson plans, which are tested, edited, printed, and made available to other teachers and school districts. Project HOPES supports the participants through follow-up workshops and visits to the teachers' classrooms during the school year.
Sponsors:	The National Science Foundation awarded a grant to fund project HOPES as a model science teacher and enrichment program. The HOPES model is being used by the Brevard County School District, Brevard Community College, and the Space Coast Science Center to create a Florida HOPES project.
Contact:	Hector Timourian Director of Science Programs Science Education Center Lawrence Livermore National Laboratory P. O. Box 808, L-793 Livermore, CA 94550 (415) 423-0556

Title:	**Project Learning Tree**
Locations:	Workshops are conducted throughout the state. To find out the date and location of a workshop or contact person in your area, call the contact person listed below.
Who Is Eligible?	Teachers in grades 1-12 are eligible.
Cost:	Teachers' manuals are provided at no charge to teachers or youth leaders who attend a four- to six-hour workshop to familiarize themselves with the materials.
Program Description:	The two Project Learning Tree manuals contain 177 learning activities, which supplement the curriculum with environmental education lessons focusing on plant life.
Sponsors:	Project Learning Tree is nationally cosponsored by the Western Regional Environmental Education Council and the American Forest Foundation. The project is administered in California by the Redwood Region Conservation Council, a California nonprofit corporation. State funds from personalized license plates are used to cover the costs of local workshops and services through the Environmental License Plate Program administered by the Mathematics and Science Education Unit of the State Department of Education.
Contact:	Kay Antunez Project Learning Tree California State Department of Forestry and Fire Protection P. O. Box 944246 Sacramento, CA 94244-2460 (916) 323-2498

Title:	**Project WILD—Wildlife in Learning Design**
Locations:	Workshops are conducted on an on-going basis throughout the state. To find out about local workshops in your area, call the number listed below.
Who Is Eligible?	Teachers in levels K-12 are eligible.
Cost:	Project WILD guides are provided free of charge to teachers who attend a workshop (minimum of four hours). Occasionally, a nominal fee is requested to cover the presenter's expenses.
Program Description:	Project WILD is a national, award-winning wildlife education program currently used in 39 states. Two guides have been published, one for the elementary level and one for the secondary grades. The guides, coupled with intensive workshop instruction, provide the educators with innovative, highly motivating activities which are easily integrated into all subject and skill areas. An aquatic supplement to the program will be available in 1988.
Sponsors:	Project WILD has been jointly sponsored at the national level by the Western Regional Environmental Education Council and the Western Association of Fish and Wildlife Agencies. In California the State Department of Education and the State Department of Fish and Game cosponsor the project.
Contact:	State Coordinator California State Department of Fish and Game 1416 9th Street, 12th Floor Sacramento, CA 95814 (916) 322-6770

Title:	**Science Activities for the Visually Impaired/Science Enrichment for Learners with Physical Handicaps (SAVI/SELPH)**
Locations:	Leadership institutes and workshop sessions are conducted in Berkeley at the Lawrence Hall of Science (LHS). Workshops may be arranged at locations around the state. Please call LHS for further information.
Who Is Eligible?	Teachers of all levels and all interested individuals are eleigible.
Cost:	Generally, workshops are provided at no cost, and materials are provided at cost. Please contact the Lawrence Hall of Science for details.
Program Description:	SAVI/SELPH materials, equipment, and processes, which were originally designed for use with students with disabilities, have been used effectively to provide science enrichment activities to all students from grades 1-10. Nine modules with innovative, unique lessons and equipment are available. Lower level modules (grades 1-5) include "Measurement," "Structures of Life," "Scientific Reasoning," and "Communication;" higher level modules (grades 5-10) include "Magnetism and Electricity," "Mixtures and Solutions," "Environments," "Kitchen Interactions," and "Environmental Energy."
Sponsors:	SAVI/SELPH is a project of the Center for Multisensory Learning (CML) of LHS and was funded originally by the U.S. Department of Education.
Contacts:	Herbert D. Thier, Associate Director, LHS Linda De Lucchi, CML Coordinator Larry Malone, CML Inservice Specialist Lawrence Hall of Science University of California Berkeley, CA 94720 (415) 642-8941

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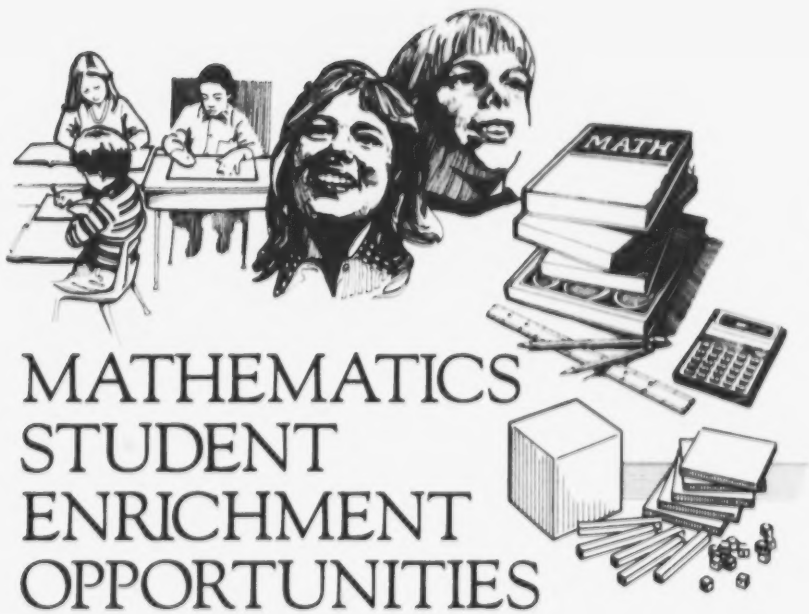

MATHEMATICS STUDENT ENRICHMENT OPPORTUNITIES

III. Mathematics Student Enrichment Opportunities

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A. Individual and Team Competitions

Team events provide an opportunity for students to cultivate and improve their interpersonal skills, and cooperative interaction with others is vital in communicating ideas. No team ever fails when team spirit and cooperation are learned.

Students discover that strengths within the team can be built on and that weaknesses can be recognized and overcome. Learning to work cooperatively may prove in the long run to be more important to the students than the resulting score or ranking.

Title:	**American Junior High School Mathematics Examination**
Entry Deadline:	Applications are due in mid-October. The first examination date is in early December.
Who Is Eligible?	All United States and Canadian students in grade 8 or below may apply.
Program Description:	The purpose is to increase interest in mathematics and to develop problem-solving ability through friendly competition. Questions range from easy to very difficult, covering material normally associated with grades 7-8 mathematics curriculum. The 40-minute test contains 25 multiple-choice questions, with no penalty for guessing. Translators are permitted for students with limited-English proficiency. Braille and large-print editions are available.
How to Enter:	A registration form and examination description are in the brochure, which is sent to each eligible school. If a brochure is needed, contact the executive director (see below). A registration fee of $10 covers intramural and national awards and a summary of results. Sets of 25 examinations cost an additional $10. A solution packet, which contains ten copies, may be ordered for $4. Send the fees and the full name and address of the school to the address given below.
Awards Given:	Intramural awards: ° A winner's pin is given to each student with the highest score in a school. ° A set of three certificates (gold, silver, and bronze) for outstanding achievement and a certificate of participation (which may be duplicated) comes with each bundle of exams. National awards are given to the top-scoring students and schools.
Sponsors:	The following organizations sponsor the examination: American Mathematical Association of Two Year Colleges American Statistical Association Mathematical Association of America Mu Alpha Theta National Council of Teachers of Mathematics Society of Actuaries
Contact:	Walter Mientka, Executive Director American Mathematics Competitions Department of Mathematics and Statistics University of Nebraska-Lincoln Lincoln, NE 68588-0322 (402) 472-2257

Title:	**American High School Mathematics Examination**
Entry Deadline:	Applications are due in mid-January. The examination date is in late February or early March.
Who Is Eligible?	All high school students in the U.S. and Canada and students who do extremely well on the American Junior High School Mathematics Examination are eligible.
Program Description:	The 90-minute test contains 30 multiple-choice questions and covers high school mathematics, excluding calculus. The examination's purpose is to spur interest and develop skills in mathematics through friendly competition. Questions range from easy to very difficult. High-scoring students are invited to take a second examination to determine contestants for the USA Mathematics Olympiad, a prestigious contest that is designed to select U.S. representatives in the International Mathematics Olympiad.
How to Enter:	Regional coordinators, whose names and addresses are listed below, mail brochures describing the examination to all high schools in California. A registration form and order form are included. Registration is $15 per school, and copies of the examination cost 60 cents each. A minimum order consists of three examinations. If the order is for ten or more copies of the examination, they must be ordered in bundles of ten. A solution packet, which contains ten copies of the answers to the examination questions, may be ordered for $4. Send the fees and name and address of the school to one of the regional coordinators listed below.
Awards Given:	Silver and bronze cups, books, and magazines are awarded to schools with high team scores within Region X, which covers the southwestern United States, Alaska, and Hawaii. Certificates of special recognition are sent to schools and individuals in California who perform well.
Sponsors:	The following organizations sponsor the examination: American Mathematical Association of Two Year Colleges American Statistical Association Casualty Actuarial Society Mathematical Association of America Mu Alpha Theta National Council of Teachers of Mathematics Society of Actuaries
Contact:	Residents of northern California should contact: Robert McFarland 2101 Highlands Road San Pablo, CA 94806 (415) 472-2257 Residents of southern California should contact: Alice King 1455 W. 25th Street Upland, CA 91786 (714) 982-0292

Title:	**American Statistical Prize Competition**
Entry Deadline:	Applications are due in late April.
Who Is Eligible?	Students in grades 4-12 may apply.
Program Description:	This contest encourages students to work together on research projects and to see firsthand how quantitative information influences our everyday lives. Each team of students selects, plans, and conducts a research project in applied statistics. The team entry must include a report demonstrating how the research was conducted and what conclusions were reached. The project must include the collection and analysis of data along with a commentary regarding the strengths and weaknesses of the selected statistical methods. The goals are to provide a vehicle for all interested students to work together as a team, to discover the scope and applicability of techniques with which they are familiar, to apply these methods in an unfamiliar context, and to develop a critical appreciation of the logical progression from the formulation of questions to the determination of final conclusions. One criterion in judging is the suitability of the research methods and data for the project chosen.
How to Enter:	An entry fee of $5, payable to the American Statistical Association, is required of each team. Entry forms and a brochure describing the competition may be obtained by sending a stamped, self-addressed envelope to the contact person (see below).
Awards Given:	A $300 prize will be awarded in each category: grades 4-6, 7-9, and 10-12. A special award of $100 goes to the person whose project makes the best use of a computer.
Sponsor:	The American Statistical Association sponsors the competition.
Contact:	Dwayne Cameron Old Rochester Regional School 135 Marion Road Mattapoisett, MA 02739

Title:	**The EUCLID Discovery Competition**
Entry Deadline:	Registration forms will be accepted until mid-September.
Who Is Eligible?	Any EUCLID team composed of a teacher and four students from any high school in the U.S. or Canada may apply. Each student must have been enrolled in the school at some time between January 1 and October 1 of the same year.
Program Description:	Thousands of students are able to make original mathematics discoveries with the assistance of a powerful computer program, which is available at a special price. The competition provides the means and incentive for such discovery making. Students can make original discoveries by using the EUCLID computer program, which enables measurement and rapid construction of millions of possibilities, including virtually all straight-edge and compass constructions and all conic sections (circles, ellipses, parabolas, and hyperbolas). The program requires accessibility to an IBM-PC computer (256K, two-disk drive, printer, and graphics adapter, other than a Hercules board).
How to Enter:	Register by mid-September. See the address and phone number listed below for a registration form.
Awards given	Prizes totaling $1,750 will be awarded to winning schools: First prize: $1,000, news coverage, and certificate Second prize: $500, news coverage, and certificate Third prize: $250, news coverage, and certificate Winners will be announced by mid-December.
Sponsor and Contact:	University of Evansville Press 1800 Lincoln Avenue Evansville, Indiana 47722 (812) 479-2488

Title:	**Golden State Examinations in Algebra or Geometry**
Who Is Eligible?	The Golden State Examination (GSE) is offered in first-year algebra and geometry to any student who is currently enrolled or who has completed the corresponding course. Because there is no penalty for failing to achieve minimum levels for recognition, all students who show an interest should be encouraged to participate.
Program Description:	The purpose of the GSE is to identify and provide recognition for students who achieve a statewide standard of excellence in selected academic subjects. The GSE is developed by the California Assessment Program of the State Department of Education and made available at no cost to districts that choose to administer it. Student participation is voluntary. The tests are scheduled for the last week of May.
How to Enter:	In February each school district receives an invitation, plus a preliminary form on which to indicate the district's intention of participating in the statewide administration of the GSE. The form must be returned by March (the date will be announced), with preliminary estimates of the numbers of students in a district who will take the examination in each subject. Timely return of the preliminary response form is essential since funding restrictions may limit participation this year.
Awards Given:	Students achieving either high honors or honors will receive a state certificate acknowledging their accomplishment as well as a GSE insignia on their high school diplomas when they graduate. Individual schools, at their discretion, may wish to provide awards for other students who achieve scores below the minimum levels for GSE honors awards. There is no penalty for failing to achieve minimum levels for recognition.
Sponsors:	The GSE is actually a series of examinations established by SB 813, the Educational Reform Act of 1983. The State Department of Education is responsible for the design and implementation of the examinations.
Contact:	California Assessment Program California State Department of Education 721 Capitol Mall Mailing address: P. O. Box 944272 Sacramento, CA 94244-2720 (916) 322-2200

Title:	**INVENT AMERICA! Program**
Entry Deadline:	April 15 is the deadline for submitting inventions to The U.S. Patent Model Foundation office in Washington, D.C., listed below.
Who Is Eligible?	All (K-8) students in public and private elementary schools are eligible, and sponsoring teachers are eligible for special recognition awards.
Program Description:	INVENT AMERICA! encourages creativity and innovation through a national invention competition program. Inventions are judged on creativity and usefulness. Students learn to recognize, analyze, and solve problems. Regardless of capabilities or interests, students can participate and develop their own unique ideas.
How to Enter:	Entries are by school. Schools will receive entry materials in November. At least one classroom must be involved. For a list of the local resource and workshop leaders in your area, contact Zack Taylor at the address given below.
Awards Given:	State, regional, and national competitions determine student winners. Awards include U. S. Savings Bonds, ranging from $200 to $1,000; grants of $250 to $1,500 to teachers for special recognition; grants of $500 to $2,250 to schools; and other grants to outstanding state programs. Local school awards may be provided by service organizations and local businesses. A similar awards system is expected to continue for future competitions.
Sponsors:	The U.S. Patent Model Foundation and over 300 American corporations serve as sponsors.
Contacts:	Kathy Comfort Office of the Shasta County Superintendent of Schools 1644 Magnolia Avenue Redding, CA 96001 (916) 244-4600, Ext. 254 Zack Taylor, Consultant Mathematics and Science Education Unit California State Department of Education 721 Capitol Mall Mailing address: P. O. Box 944272 Sacramento, CA 94244-2720 (916) 324-7189 The U.S. Patent Model Foundation 1331 Pennsylvania Ave., NW, #903 Washington, DC 20004 (202) 737-1836

Title:	**JETS' TEAMS Competition**
Entry Deadline:	JETS' competitions are usually held in February and March. For applicants to be eligible for national awards, application by the local, regional, or state sponsor must be made by early January.
Who Is Eligible?	JETS' members in grades 9-12 are eligible.
Cost:	The JETS' annual membership fee of $8 per student includes two tests and entitles students to receive the newsletter, *JETS' Report*.
Program Description:	The JETS (Junior Engineering Technical Society Tests of Engineering Aptitude, Mathematics, and Science) program is designed to encourage interest in engineering, technology, and science through competitions. Academic tests are given to teams of students representing their schools or clubs. Areas tested are biology, mathematics, engineering, graphics, chemistry, physics, English, and computer fundamentals. A JETS' TEAMS competition may cover a local, regional, or state area. Any nonprofit institution, organization, or school may sponsor this competition. There are two team categories, based on school enrollment: large school division, 700 students or more; and small school division, less than 700 students. A student may have only two test scores count per team score. Winning scores are sent to JETS for national ranking. Scores must be sent for review by early April. Generally, the national test is given in mid-April. Contact the state coordinator for details.
How to Enter:	For information, write or call the contact person listed below.
Awards Given:	Recognition is given to students in individual subject areas and to the school teams with the highest aggregate scores. Trophies, plaques, medallions, and certificates may be ordered from the JETS' national office.
Sponsors:	JETS, Inc., and local organizations sponsor this activity. JETS is endorsed by the National Council of Teachers of Mathematics and the National Association of Secondary School Principals. JETS has been commended by the American Association for the Advancement of Science and is encouraged by the Engineering Deans Council. Competitions are generally sponsored locally by universities or colleges and the California Society of Professional Engineers.
Contact:	Anne Gymer, JETS State Coordinator Office of the Madera County Superintendent of Schools 28123 Avenue 14 Madera, CA 93638 (209) 673-6051, Ext. 260

Title:	**MATHCOUNTS**
Entry Deadline:	Applications must be submitted by mid-November. Materials are delivered between early December and mid-January.
Who Is Eligible?	All students in grades 7 and 8 are eligible.
Program Description:	MATHCOUNTS is more than a series of competitions. Young people are brought together for a lively exchange of mathematical ideas among teams and schools. The program builds skills, promotes strategic problem solving, and gives students practice in dealing with complex problems and hard-to-handle numbers, activities which are an essential part of our technological society. A series of contests determines the selection of a school team. Regional contests establish state teams which compete in Washington, D. C., in May of each year. Special honors are given for national winning teams and individuals.
How to Enter:	Request an order form from the California Society of Professional Engineers (CSPE) (see below) or a designated regional coordinator. Follow the instructions on the forms to order the necessary quantities. There is a $5 charge for a complete set of forms for the chapter, state, and national competitions. There is no charge for the school competition, certificates of participation, or ribbons. Purchase orders are <u>not</u> accepted.
Awards Given:	Four individuals are selected by each school for the second-level (chapter competition). Up to 12 individuals are recognized, of which four represent the chapter at state competitions. In California the state competition is held in two locations to accommodate the northern and southern regions. The top four students in California represent the state in Washington, D.C. At all levels appropriate recognition and/or awards are given to winning individuals, teams, coaches, and schools.
Sponsors:	The National Society of Professional Engineers; its affiliate, the California Society of Professional Engineers (CSPE); and CNA Insurance Companies sponsor the program.
Contact:	California Society of Professional Engineers (CSPE) 1005 12th Street, Suite J Sacramento, CA 95814 (916) 442-1041

Title:	**Mathematics Olympiads for Elementary Schools**
Entry Deadline:	Applications must be submitted by late September.
Who Is Eligible?	Elementary students who have not completed the sixth grade are eligible.
Program Description:	The Mathematics Olympiads for Elementary Schools (MOES) provides opportunities for children to engage in creative problem-solving activities. Copies of five Olympiad contests are mailed to participating schools at monthly intervals. Each contest has five problems, each with a time limit. Each correct answer is awarded one point, with individual scores cumulative. Scores serve as a basis for special awards. Newsletters sent at monthly intervals give statistics for contests and contain other articles of interest.
How to Enter:	Write to the contact person (see below) from April through August. Ask for information about the Olympiads and a registration form. The membership fee is determined annually by the board of directors. In each of the last four years, the fee has been $50. A school may have as many as 35 students on a team and may enter more than one team. During the 1986-87 school year, about 50,000 students representing 2,024 teams were entered. Geographically, 17 foreign countries are represented among the teams. Colombia and Australia are affiliated with MOES.
Awards Given:	A certificate is given to each participant, and a trophy is awarded to the high scorer of the team. The top half of all students in scoring receive a cloth patch embroidered with the Olympiad logo. The top 10 percent receive a silver or gold Olympiad pin. Students who have a perfect score receive a special medallion. Schools whose team scores are in the highest 10 percent receive a special plaque.
Sponsors:	MOES is a nonprofit, tax-exempt public foundation supported by membership fees and contributions.
Contact:	George Lenchner, Executive Director Mathematical Olympiads for Elementary Schools State University of New York—College at Old Westbury P. O. Box 190 Old Westbury, NY 11568 (516) 333-3413

Title:	**MESA Day Competitions**
Entry Deadline:	The date is announced by individual MESA Centers.
Who Is Eligible?	Members of MESA are eligible for the MESA Day competitions. MESA membership in the precollege program is open to students from grades 7-12 who have an aptitude and interest in mathematics and science and who are from underrepresented ethnic groups. College students may continue in MESA through the MESA Minority Engineering Program.
Program Description:	MESA is an academic support and enrichment program operated within the public schools and supported by the University and College Opportunities Unit, California State Department of Education, major corporations, and universities. Regional MESA programs are administered on 16 university campuses in California, involving 16,000 students and adult volunteers. Annual regional MESA Days in northern and southern California feature mathematics, engineering, and science competitions.
Awards Given:	The award may vary, depending on the MESA Center or type of competition.
Sponsors:	Mathematics, Engineering, and Science Achievement (MESA) statewide office; local and statewide industry supporters; and hosting college campuses serve as sponsors.
Contacts:	The school's MESA adviser or Fred Easter, State Director MESA Lawrence Hall of Science University of California Berkeley, CA 94720 (415) 642-5064

Title:	**National Mathematics League**
Entry Deadline:	Applications must be submitted by mid-October.
Who Is Eligible?	Mathematics students in middle school, junior high school, or high school who are currently enrolled in a course corresponding to their division of competition are eligible.
Program Description:	The purpose of the program is to further the study of mathematics and to give students the opportunity to earn both school and individual honors. Competitions are held in the following divisions: ° Analysis (Advanced Mathematics) ° Algebra II ° Geometry ° Algebra I ° Prealgebra (grades 7 and 8) ° Mathematics for sixth grade Each of five contests (held once a month beginning in December) has six open-answer problems, with a 30-minute time limit. Paper and pencil only are permitted.
How to Enter:	Contact the address given below for rules, information, and entry forms. Or simply mail your school's name, address, and the contact person's name and telephone number to the address given below. Include $35 for each division you wish to enter. The fee covers five copies of each of the five contests (copies may be duplicated as needed); one score sheet; and one answer key, including detailed solutions and/or explanations of each problem, for each contest. The previous year's contest packets are also available as practice material for $10 per packet.
Awards Given:	Each school receives a ribbon for each division winner. Schools with the highest cumulative scores in each division receive an engraved plaque, and top-scoring individuals will receive ribbons. Newsletters are mailed after each contest to announce winners in each division. Photographs will be requested for publication in the final awards newsletter.
Sponsors:	The National Mathematics League is a private association created by Florida school teachers who are currently teaching.
Contact:	National Mathematics League Box 9459 Coral Springs, FL 33075 (305) 344-8980 or 527-6411

B. Regional and District Mathematics Fairs and Contests

Students who enter these events are all winners because the strengths and weaknesses they discover will help them gain self-understanding. In most cases students entering the events are presented certificates for participation.

Title:	**Elementary Mathematics Contest, San Juan Unified School District**
Entry Deadline:	Applications must be submitted by mid-March.
Who Is Eligible?	Two students from each elementary school in the San Juan Unified School District are eligible.
Program Description:	The elementary mathematics contest is an individual power test, as well as a four-member team cooperative learning test in mathematics.
How to Enter:	Participants must be selected by the local schools according to local regulations.
Awards Given:	Trophies, certificates, and pencils are provided.
Sponsors:	The San Juan Unified School District and Kiwanis Club serve as sponsors.
Contact:	Karen Borman (916) 971-7136 Gary Blaisdell (916) 971-7667 San Juan Unified School District 3738 Walnut Avenue Carmichael, CA 95608

Title:	**Mathematics Contest (Grades 1-8), Stockton Unified School District**
Entry Deadline:	School site winners are named by the end of April. The district-level contest is held during the first week of May.
Who Is Eligible?	All Stockton City Unified School District students, grades 1-8, are eligible to participate in the school site mathematics test.
Program Description:	School-level mathematics tests for each grade, 1-8, are sent to each school. Every student can participate. The school winners, one for each grade, 1-6, then compete at the district level. In grades 7-8 the top three school winners participate at the district level.
How to Enter:	Information about the tests is sent to all eligible schools.
Awards Given:	Awards at the district level are given to the first-place, second-place, and third-place winners. The awards are given at a school board meeting the last week in May.
Sponsors:	The Stockton Unified School District and Stockton PTA Council sponsor this contest.
Contact:	Ray Tom (209) 944-4792 Carl Burger (209) 944-4232 Stockton City Unified School District 701 N. Madison Stockton, CA 95202

Title:	**Mathematics Contest (Grades 5-12), Santa Cruz County**
Entry Deadline:	The day of the contest is the entry date.
Who Is Eligible?	Public and private school students, grades 5-12, in Santa Cruz County may enter.
Program Description:	The contest is held on a Saturday morning at Cabrillo College. Students participate in the following divisions: Division I: Grades 5-6 Division II: Grades 7-8 Division III: Grades 9-10 Division IV: Grades 11-12
How to Enter:	Students register on the morning of the contest.
Awards Given:	During a special awards ceremony at a county board meeting, plaques and medals are presented to division winners. All participants receive certificates of participation.
Sponsors:	The Office of the Santa Cruz County Superintendent of Schools and Granite Construction Company sponsor the event.
Contact:	Kenneth L. Larson Director, Instructional Support Services Office of the Santa Cruz County Superintendent of Schools 809 Bay Avenue, Suite H Capitola, CA 95010 (408) 476-7140

Title:	**Mathematics Olympics (Grades 7-8), San Juan Unified School District**
Entry Deadline:	Applications must be submitted by late March.
Who Is Eligible?	Teams with two to four members from each eligible elementary school in the San Juan Unified School District may enter. One team must be composed of students in general mathematics classes.
Program Description:	The Mathematics Olympics Contest for grades 7-8 includes an individual power test, as well as a team competition.
How to Enter:	Team members are selected by the local schools.
Awards Given:	Trophies, medals, and certificates are awarded.
Sponsors:	The San Juan Unified School District and fees from the local schools support the program.
Contact:	Carol Waters (916) 971-7136 Dee Ward (916) 971-7324 San Juan Unified School District 3738 Walnut Avenue Carmichael, CA 95609-0477

Title:	**Mathematics Super Bowl (Grades 7-8), Tulare County**
Entry Deadline:	Applications must be submitted by late March.
Who Is Eligible?	All Tulare County students in grades 7-8 are eligible.
Program Description:	The program consists of mathematics contests for five-member teams. Three types of tests are given: 1. Individual (40 questions) 2. Group (ten problem-solving questions) 3. Relay (four sets of five questions) The team with the highest total of points wins.
How to Enter:	Obtain entry forms from Ronald Koop (listed below).
Awards Given:	Awards are given to the ten individuals who score the highest on the 40-question test. Team awards are given for these categories: small school, large school, grade 7, and grade 8.
Sponsors:	Office of the Tulare County Superintendent of Schools Visalia Unified School District Josten's, Inc. Tulare Mathematics Council California Mathematics Council
Contact:	Ronald Koop Office of the Tulare County Superintendent of Schools Education Building County Civic Center Visalia, CA 93291 (209) 733-6300

Title:	**Mathematics Field Day, Chula Vista Schools**
Entry Deadline:	The deadline for schools to enter is in October. The deadline for students to enter is the last day of school before the December break.
Who Is Eligible?	All students in grades 4-6 in the Chula Vista City School District may apply. (Note: Approximately 2,000 students enter each year.)
Program Description:	Field days are held at all participating schools during the first weeks in January. The competitions culminate after students have had approximately three months of practice on field day events. The events deal with logic, mental arithmetic, calculator use, problem solving, computation, geometry, and number concepts. Winners are selected at each school site, and district winners are selected from this group. The top 36 district winners attend the San Diego County Mathematics Field Day held on a Saturday in the middle of March.
How to Enter:	The 29 district schools are sent invitations and entry forms in early October. They complete them, indicating the events and grade levels in which they will participate. Any student in grades 4-6 in any participating school may enter any event.
Awards Given:	Certificates are presented to all participants. Special certificates are given to school winners. A third type of certificate is presented to all district winners, together with a mounted old U.S. coin (for example, liberty nickels, buffalo nickels, and Indian head pennies). The awards are provided by the Chula Vista City Schools Administrators Association.
Sponsors:	Janet Abbott, District Mathematics Coordinator, is in charge. Three teachers and/or principals sponsor the San Diego County Mathematics Field Day. A teacher or principal at each participating school sponsors the district mathematics field days.
Contact:	Janet Abbott Mathematics Coordinator Chula Vista City School District 84 East J Street Chula Vista, CA 92010 (619) 425-9600

Title:	**Mathematics Field Day, Fresno County**
Entry Deadline:	Applications are due by mid-February.
Who Is Eligible?	All Fresno County students in grades 7-8 are eligible.
Program Description:	During Mathematics Field Day over 900 students of three ability levels participate in a power pack (individual contest). Three-member teams compete in problem solving and a calculator relay.
How to Enter:	Registration is open to Fresno County public and private schools at the Office of the Fresno County Superintendent of Schools.
Awards Given:	Awards are given to individuals and teams of each ability level, and school sweepstakes are also awarded. The prizes are trophies, ribbons, and participation certificates.
Sponsors:	Office of the Fresno County Superintendent of Schools Fresno Pacific College California Mathematics Council Student Activities Trust Public Schools Committee
Contact:	Tony Spears, Curriculum Coordinator Mathematics/Science Office of the Fresno County Superintendent of Schools 2314 Mariposa Avenue Fresno, CA 93721 (209) 488-3332

Title:	**Mathematics Field Day, Los Angeles County**
Entry Deadline:	Entries must be submitted in early April.
Who Is Eligible?	All grades 4-6 in Los Angeles County are eligible.
Program Description:	This event is the culmination of a year-long problem-solving instructional program in four categories: problem solving, estimation, mental arithmetic, and use of calculators.
How to Enter:	Applicants must: 1. Submit an "Intent to Participate." 2. Attend the initial planning meeting and pick up the problem-solving handbook.
Awards Given:	The prizes are: ° Trophies for first-place winners in problem solving ° Plaques for first-place, second-place, and third-place winners in each of the four events for each grade level ° A certificate of participation for each student
Sponsors:	The Office of the Los Angeles County Superintendent of Schools, Curriculum and Instructional Programs, sponsors the event. The California Mathematics Council, Southern Section, and various publishers provide support.
Contact:	Gerlena Clark, Consultant Curriculum and Instructional Programs Office of the Los Angeles County Superintendent of Schools 9300 E. Imperial Highway Downey, CA 90242 (213) 922-6817

Title:	**Mathematics Field Day, Riverside County**
Entry Deadline:	Applications must be submitted in early March.
Who Is Eligible?	Teams of Riverside County students from grades 6, 7, and 8 are eligible.
Program Description:	This contest provides event and game competition. Each participant enters an event, (for example, Chalk Talk, Quiz the Wiz, Mad Hatter, Leap Frog, Luck-or-Logic, or Terminology) and then competes in a game of Hex, Three Dimensional Tic-Tac-Toe, Five-in-a-Row, Nim, or Capture. (Chalk Talk participants cannot enter a game.) Music, entertainment, activities, and lunch are followed by an awards assembly from 1 p.m. to 2 p.m.
How to Enter:	Complete an application form and send to: Registration Chair Pat Bulteria Pedley Elementary School 5871 Hudson Street Riverside, CA 92509 (714) 681-3445
Awards Given:	Trophies are given to the top five students in each event at grades 6, 7, and 8 and to the top four game winners in grades 6, 7, and 8. An overall team trophy is awarded for each grade.
Sponsors:	This event is sponsored by the Office of the Riverside County Superintendent of Schools and the Riverside County Mathematics Teachers Association.
Contact:	Judy Anderson Office of the Riverside County Superintendent of Schools 3939 13th Street Mailing address: P. O. Box 868 Riverside, CA 92502 (714) 369-6408

Title:	**MATHLETES, Marin County**
Entry Deadline:	Competitions are held in early November and from January through April.
Who Is Eligible?	Participants are grade 7-8 teams from schools in Marin County.
Program Description:	MATHLETES is a series of five meets at which teams of five students per grade level, per school, do five individual problems and one team problem.
How to Enter:	Teachers select the participants.
Awards Given:	The winning school is awarded a perpetual plaque, which goes to the winner of each meet. A plaque for an outstanding student is given to each school, and first-place, second-place, and third-place plaques for championship teams are awarded at each grade level.
Contact:	Carol Cooper, Administrative Assistant Office of the Marin County Superintendent of Schools 1111 Galinas Avenue San Rafael, CA 94913 (415) 499-5814

Title:	**MATHLETES, San Juan Unified School District**
Entry Deadline:	There is no deadline.
Who Is Eligible?	Team members from each high school in the San Juan Unified School District are eligible. Each school is allowed two teams and may have, at the most, two seniors. At least one freshman or sophomore must also be on each team.
Program Description:	Students take tests in topics from arithmetic, introductory algebra, geometry, intermediate algebra, and trigonometry. Scores are posted immediately and schools are notified.
How to Enter:	Contact the high school mathematics department chairperson.
Awards Given:	Perpetual trophies are awarded for first-place, second-place, and third-place winners. At the end of the year, the team that has placed first, second, or third for the year keeps the trophy it won. There is also a section meet in May at California State University, Sacramento, where trophies are awarded for first-place, second-place, and third-place winners.
Sponsors:	San Juan Unified School District mathematics department chairpersons sponsor this competition.
Contact:	Duane Peterson Del Campo High School 4925 Dewey Drive Fair Oaks, CA 95628 (916) 971-5693

Title:	**Nevada County Mathematics Tournament**
Entry Deadline:	Applications are due approximately April 1 (the date varies slightly each year).
Who Is Eligible?	Participants are students in grades 5-8 in schools in western Nevada County. Three students per grade from each school may compete.
Program Description:	Two tournaments are held in April: one for grades 5-6 and one for grades 7-8. Students are tested in computation, problem solving, and geometry.
How to Enter:	Each school determines its own method of selecting contestants, and the names are submitted to the county office.
Awards Given:	A first-place trophy and second-place to fifth-place ribbons for each grade and each division are awarded.
Sponsors:	The Office of the Nevada County Superintendent of Schools, along with local businesses and community organizations, supports the program.
Contact:	Beverly Pando Office of the Nevada County Superintendent of Schools 11745 Maltman Drive Grass Valley, CA 95945 (916) 272-7222

C. Extracurricular Opportunities

The resources for extracurricular activities for mathematics exploration are everywhere. Some suggested activities are discovering the mathematical pattern of seeds and leaves, computing the height of a building, discovering how vehicles are weighed, and learning how satellites are launched into orbit.

The resources listed in this section are available to students throughout California. Students and teachers are encouraged to seek out and take advantage of all available resources to make mathematics education come alive through real-life applications, exhibitions, and experiences.

Title:	**The Exploratorium**
Public Hours:	The museum is closed on Mondays and Tuesdays. Fall, winter, and spring hours are: Wednesday, 1 p.m. to 9:30 p.m. Thursday and Friday, 1 p.m. to 5 p.m. Saturday and Sunday, 10 a.m. to 5 p.m. The summer hours are: Wednesday, 11 a.m. to 9:30 p.m. Thursday and Friday, 11 a.m. to 5 p.m. Saturday and Sunday, 10 a.m. to 5 p.m.
Admission:	Admission is free for persons 17 years or younger, $2 for seniors and organized groups, and $4 for adults (any ticket is good for six months). Members are admitted free. Ample parking is available, and wheelchair access is provided.
Program Description:	The Exploratorium is a museum for people of all ages and all levels of scientific understanding. Visitors can enjoy the natural phenomena that have been discovered by scientists or observed by artists. Children can use exhibits to demonstrate concepts to their parents or vice versa. School groups are invited to the Exploratorium even when it is not open to the public. Arrangements need to be made ahead of time. A student fee is charged, but adult chaperons are admitted free. College-age "Explainers" provide demonstrations and explanations of the exhibits, and they are available to talk and work with teachers.
Location:	The Exploratorium is located in the Palace of Fine Arts, close to Golden Gate Park, and across from the San Francisco Marina.
Sponsors:	The Exploratorium has been funded by government agencies (for example, the city of San Francisco provides the space rent free and contributes about 6 percent of the annual budget). Private foundations, individual gifts, corporations, store income, and memberships are other sources of funds. Donations are always welcome.
Contact:	The Exploratorium 3601 Lyon Street San Francisco, CA 94123 (415) 563-3200 (recorded message) or (415) 563-7337

Title:	**Great Explorations in Mathematics and Science (GEMS)**
Locations:	Workshops are held at the Lawrence Hall of Science at the Berkeley campus, or they may be arranged at school sites.
Who Is Eligible?	Preschool through grade 10 students are eligible.
Cost:	Approximately $4.50 to $11 is charged for each *GEMS Teacher's Guide*. The cost varies, depending on the number of activities in the *Guide*. The *School Assembly Presenter's Guide* is $10 each and the *Exhibit Guide* is $29.50. Workshops are available for groups of teachers. Please call or write for further information.
Program Description:	GEMS consists of a collection of some succesful programs that were developed at the Lawrence Hall of Science and that cover concepts across the sciences. These activities have been field-tested in classrooms nationwide, revised by several hundred classroom teachers, and described in published documents. There are over 20 teacher's guides now available, which contain from two to 15 lessons with hands-on activities integrating mathematics and science. The activities, with the use of easy-to-obtain materials, are designed to teach key science concepts and processes. In addition, two guides for school assembly presentations are available, targeted toward grades 3-6, but they are adaptable to any grade level. One of eight exhibit guides currently offered by GEMS, "Shapes, Loops, and Images," presents ideas for exhibits with hands-on experiences, using logic and spatial relationships. GEMS materials are keyed to the *Science Framework Addendum for California Public Schools*. Once introduced in a workshop, the units may be used successfully without additional special instruction in mathematics or science for the teacher.
Sponsors:	The Lawrence Hall of Science publishes its own curriculum, supported by the A.W. Mellon Foundation and the Carnegie Corporation of New York.
Contacts:	Jacquey Barber, Director Cynthia Ashley, Program Representative GEMS c/o Lawrence Hall of Science University of California Berkeley, CA 94720 (415) 642-7771

Title:	**International Summer Institute**
Entry Deadline:	Students must apply before the end of May.
Who Is Eligible?	Students aged 13 to 18 are eligible.
Program Description:	At the International Summer Institute, the following are offered: advanced mathematics, science, and computer courses; courses to prepare for *Scholastic Aptitude Tests (SAT)*; seminars on mathematics and science research by leading scientists; computer-oriented research projects; visits to research laboratories; cultural exchanges with foreign students, which include chess lessons, a marine biology cruise, sports and recreation; and films, concerts, and other cultural events.
Locations:	Institutes will be held at Southampton College of Long Island University, Southampton, New York, or the University of California at Los Angeles, Westwood, California.
Cost:	Two three-week sessions with college credit are offered. Students may attend either session or the full six weeks. The sessions are customarily held in July and August. The fee depends on whether enrollment is for three or six weeks. Some financial aid is available.
Sponsors:	The National Center for Excellence in Education sponsors this event in cooperation with: Long Island University University of California, Los Angeles National Council of Teachers of Mathematics National Science Teachers Association Stanley Kaplan Educational Center Corporate sponsors
Contact:	Edward Lozansky National Center for Excellence in Education 4301 Connecticut Avenue, NW Washington, DC 20008 (202) 364-0200

Title:	**Lawrence Hall of Science**
Locations:	The Lawrence Hall of Science (LHS) is located in the hills above the University of California, Berkeley.
Who Is Eligible?	Students of all levels may participate in LHS programs.
Cost:	Generally, workshops are provided at no cost, and materials are provided at cost. Please contact the Lawrence Hall of Science for details.
Program Description:	LHS is a multipurpose educational facility. Hands-on, exploratory models and displays draw community groups, school groups, and the general public. The LHS staff present numerous after school mathematics-related classes, which change regularly. The LHS staff turn elementary and junior high school classrooms into science laboratories by using an inflatable planetarium, animals, chemistry experiments, and mathematics activities. The Science Shuttle may be also presented as an assembly program. For information about the classes and the appropriate ages of the participants, write for *The LHS Quarterly* or call (415) 642-5134 Monday through Friday, 8:30 a.m.–4:30 p.m.
Sponsors:	LHS cooperates with industry, private foundations, the University of California, and other learning centers and institutions to develop its program exhibits and projects.
Contact:	Herbert D. Thier, Associate Director Lawrence Hall of Science University of California Berkeley, CA 94720 (415) 642-8718

Title: **Lawrence Livermore National Laboratory**

Entry Deadline: Call for arranging educational services.

Who Is Eligible? The program targets San Francisco Bay Area teachers who wish to improve their knowledge of science education. Also, some services are available for students in schools located at distances exceeding 100 miles from the laboratory.

Program Description: Since its opening in 1984, the Lawrence Livermore National Laboratory (LLNL) Science Education Center (SEC) has served as a major resource center, sharing laboratory expertise in science, mathematics, and computers with students and teachers. The SEC has a mini-auditorium for demonstrations, lectures, and films; an experiment corner for hands-on scientific experiments; a resource library; and a dozen microcomputers. SEC programs include:

1. Computer education offers classes, workshops, and self-guided tutorials on LOGO, BASIC, typing, and other programs for students, teachers, and other school personnel.

2. The science library provides texts and periodicals.

3. The guest speaker series provides a wide range of topics tailored to the needs of the audience, providing current and relevant information about LLNL and applied mathematics topics.

4. The *Science Education Center Report* is a monthly newsletter for teachers and students on SEC activities.

5. The tutorial program provides seventh grade through college level students with help in understanding science, mathematics, and computers.

6. The U.S. Department of Energy High School Supercomputer Honors Program is held for two weeks during the summer.

How to Enter: Call or write one of the contacts listed below.

Sponsors: The Lawrence Livermore National Laboratory is operated by the University of California for the U. S. Department of Energy.

Contacts:

Hector Timourian
Director of Science Programs
Science Education Center
P. O. Box 808, L-793
Livermore, CA 94550
(415) 423-0556

Stephen Sesko
Associate Administrator
Science Education Center
P. O. Box 808, L-793
Livermore, CA 94550
(415) 423-0556

Title:	**Math/Science Network for Girls**
Entry Deadline:	Dates for registration vary at each location; conferences are generally held in the spring.
Who Is Eligible?	Junior high school and high school girls are eligible.
Program Description:	The "Expanding Your Horizons" conferences for girls in grades 7-12 are offered once a year. Participants hear speakers from various professions in science, technology, and mathematics and receive encouragement to pursue careers which involve the use of mathematics and the sciences. Hands-on experiences, discussion of career options, and sharing with peers are among the activities at some of the conferences.
How to Enter:	Register in January and February. For further information see the address and phone number listed below.
Locations:	These statewide conferences are usually held in March, although dates and locations vary. In most locations conferences are held either after school on a weekday or on a Saturday. Please contact the individuals listed below for further information regarding the nearest conference.
Cost:	A minimal fee, usually $3 to $10, is charged for meal, facility use, and materials. Preregistration is required.
Sponsors:	The Math/Science Network, with headquarters at Mills College in Oakland, and local branches of the American Association of University Women coordinate the conferences. Speakers, workshop leaders, and volunteers at the conferences are usually local professional women and interested individuals. Local businesses and industry often contribute appropriate materials and equipment for the participants.
Contacts:	Joy Wallace, Program Director Susan Stanley, Secretary Math/Science Network c/o Mills College 5000 MacArthur Boulevard Oakland, CA 94613 (415) 430-2230 (415) 430-2255 (Campus Information)

Title:	**MESA: Mathematics, Engineering, and Science Achievement**
Entry Deadline:	There is no deadline for membership. However, the best time to begin a new chapter is in March.
Who Is Eligible?	Any middle school, junior high school, or high school desiring to target historically underrepresented minorities (for example, American Indian, Mexican-American, black, or Puerto Rican) for special assistance in achieving success in mathematics, engineering, or science may apply.
Program Description:	There are 17 MESA precollege centers in California, each affiliated with a university that has a strong engineering or physical science department. A network of individuals and organizations around the state supports MESA through donations of time, money, and professional skills. The MESA Program helps minority students to meet goals that lead to a mathematics-based college program. MESA offers organized study, academic advising, summer enrichment programs, and scholarship incentive awards. Meetings (to meet professional role models and to learn how to write resumes and apply for jobs), career exploration, and family involvement are also provided. Ninety percent of the high school seniors who participate in MESA pursue mathematics-related fields in college.
How to Enter:	A principal or teacher completes a MESA form, which may be obtained from the contact named below. Information is requested about the school's minority population, the mathematics/science curriculum, and the capacity of the school to provide extracurricular activities for minority students (tutoring, field trips, and so forth). The name of a teacher sponsor is also requested.
Awards Given:	At an annual banquet, recognition for achievement is provided by the MESA centers in the form of material awards (for example, backpacks, calculators, T-shirts, and cash grants).
Sponsors:	The University and College Opportunities Unit of the California State Department of Education and industries such as Atlantic Richfield, Pacific Telesis, IBM, and Hewlett Packard serve as sponsors. In addition to money grants, sponsoring firms provide eight loaned executives, who work full time helping to manage MESA.
Contact:	To learn the name of one of the 17 centers nearest your school, contact: Fred Easter, Statewide Director MESA Lawrence Hall of Science University of California Berkeley, CA 94720 (415) 642-5064.

Title:	**Mu Alpha Theta**
Who Is Eligible?	Mu Alpha Theta supports high school mathematics clubs. High schools are eligible that offer at least six semesters of mathematics, including algebra, geometry, and more advanced topics, and that have at least one teacher with a mathematics major or equivalent and whose primary teaching field is mathematics.
Program Description:	The program's purpose is to stimulate interest in mathematics by providing public recognition of superior scholarship and by promoting various mathematics activities for students. The 1,200 chapters are in 42 states in the U.S. as well as in Canada, Japan, Switzerland, and Germany. The *Mathematical Log*, the official journal, is sent free to chapters. Understandable articles on mathematics are specially written for the intended audience. Copies of the publication are sent to each chapter without charge.
How to Enter:	The school should request a copy of the "Petition for Charter" from the address listed below. An initial charter fee, $10 plus an initiation fee of $2 for each member, must accompany the petition. The fee will be returned if the school is ineligible. Other pertinent information accompanies the "Petition for Charter."
Awards Given:	Insignia pins, buttons, charms, patches, banners, and small seals are available from the national office. Regional, state, and national meetings occur frequently. Regional and state meetings are held to honor members who have distinguished themselves in mathematical activities. Chapter meetings can be designed for annual local honors.
Sponsors:	The Mathematical Association of America and the National Council of Mathematics sponsor the program.
Contacts:	Thomas J. Hill, Secretary-Treasurer Mu Alpha Theta 601 Elm Avenue, Room 423 Norman, OK 73019 Betty K. Lichtenberg, President Mu Alpha Theta Mathematics Education EDU 307 University of South Florida Tampa, FL 33620

Title:	**Precollege Programs for High Ability Science Students**
Entry Deadline:	Students are encouraged to apply early in the calendar year. Deadlines may vary at each institution.
Who Is Eligible?	Each of the sponsoring institutions sets the criteria for eligibility. In general, admission is based on a combination of scholastic ability; completion of certain courses; recommendations from the high school teacher, principal, and/or counselor; and motivation. In some cases programs give preference to minorities. Some institutions have established specific selection criteria, such as a certain grade point average (GPA) or a GPA based on science courses which the student has taken.
Program Description:	Several California institutions provide educational opportunities in science, engineering, and mathematics for talented precollege (generally high school) students. The three general types of programs are research, courses, or a combination of research and courses. These may be offered during the summer, during the academic year, or year-round. Students may commute to or reside at the facility. Some of the institutions charge for participation; others do not.
How to Enter:	Contact the learning institution nearest you for further information.
Locations:	For the names of all the participating institutions, send $3 for a copy of the *Directory of Student Science Training Program for High Ability Precollege Students* to Science Service at the address given below. For the name of the nearest institution, contact the Mathematics and Science Education Unit listed below.
Sponsors:	Science Services publishes the directory each year. The National Science Foundation supports, in part, the publication of the directory.
Contact:	Science Service 1719 N Street, NW Washington, DC 20036 Attn: Carol Luszcz (202) 785-2255 Mathematics and Science Education Unit California State Department of Education 721 Capitol Mall Mailing address: P. O. Box 944244 Sacramento, CA 94244-2720 (916) 324-7190

Title:	**U.S. Department of Energy High School Honors Program**
Entry Deadline:	Applications are due by March 1.
Who Is Eligible?	High school students who have a strong interest in mathematics, science, and/or computers and who are recommended by their teachers, principals, and parents are encouraged to apply. Students who are entering their senior year and have shown exceptional achievement in completing high school science classes will be chosen to represent California.
Program Description:	Six high school students from California will be selected to attend a two-week session at one of six U.S. Department of Energy Laboratories. This program is aimed at placing some of America's most promising high school students in an environment that is both intellectually challenging and culturally inspiring. Students are exposed to a wide variety of topics and encouraged to discuss both the advances and social implications of science, computers, and mathematics.
How to Enter:	Write to the address given below to request an application. The student completes the application, which includes writing a short essay, and returns it to the Mathematics and Science Education Unit of the California State Department of Education by March 1. Signatures of the parent, teacher, and principal recommending the student are required.
Awards Given:	Nominees will attend an expense-paid, two-week session at one of the U.S. Department of Energy laboratories in the United States.
Location:	The U.S. Department of Energy laboratory at the Lawrence Livermore National Laboratory in California offers a program in computers and mathematics:
Selection:	The Governor of California usually selects participants from a list of students who are screened and recommended by staff from the California State Department of Education.
Sponsor:	The honors program is sponsored by the U.S. Department of Energy.
Contact:	U.S. Department of Energy High School Honors Program Mathematics and Science Education Unit California State Department of Education 721 Capitol Mall Mailing address: P. O. Box 944272 Sacramento, CA 94244-2720 (916) 324-7190

Title:	**Young Astronauts Program**
Entry Deadline:	Chapter memberships begin on September 1 and end on August 31 of the following year.
Who Is Eligible?	Elementary school and junior high school students in grades 1-9 are eligible for membership.
Program Description:	Young Astronauts encourages students in elementary and junior high schools to study science, mathematics, technology, and other related subjects. Aerospace experts and representatives of all major professional education associations serve on the Education and Technology Advisory Board. They review materials to blend learning with fun in classroom activities. Specialized materials, which are sent to the schools quarterly, are available for grades 1-3 (Trainee), grades 4-6 (Pilot), and grades 7-9 (Commander).
How to Enter:	See the address and phone number listed below. A chapter registration form must be filled out by the teacher, parent, or volunteer who wishes to be the chapter leader. Annual dues of $20 per chapter are sent in with the registration form.
Awards Given:	Each chapter receives a chapter certificate. At no extra charge schools have the option to use "Astro Net," a computer program that has related activities. Information is also provided on contests which have a variety of prizes, such as foreign exchanges, trips, and plaques.
Sponsors:	Young Astronauts is presently sponsored by major corporations. The organization, which was established through the Private Sector Initiative of the White House, was developed in the summer of 1984 and implemented in October, 1984.
Contacts:	Wendell Butler, Executive Director Jennifer Rae, Membership Services Young Astronaut Council P. O. Box 65432 Washington, DC 20036 (202) 682-1985

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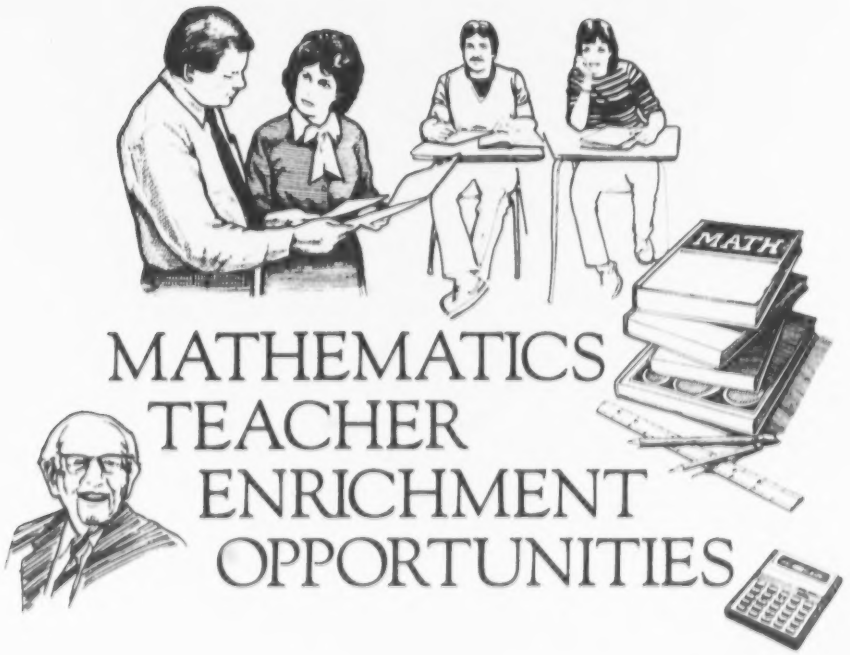

MATHEMATICS TEACHER ENRICHMENT OPPORTUNITIES

IV. Mathematics Teacher Enrichment Opportunities

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A. Professional Recognition, Awards, and Grants

Opportunities for professional and personal growth for educators are limitless. California teachers have been recognized as having outstanding programs and achievements in mathematics education.

The programs listed in this section honor mathematics teachers whose efforts touch the lives of their students with far-reaching consequences. All mathematics educators are encouraged to apply for these programs.

Title:	**GTE Growth Initiatives for Teachers (GIFT)**
Entry Deadline:	Applicants' materials must be submitted by mid-January.
Who Is Eligible?	GIFT is available to public and private secondary school (grades 7-12) mathematics and science teachers in Arizona, California, Florida, Indiana, Massachusetts, North Carolina, Texas, and the District of Columbia.
Program Description:	GIFT provides opportunities for school enrichment and professional development. A teaching team consisting of one mathematics teacher and one science teacher submits a proposal that integrates both subjects to promote effective student outcomes. Each team member also submits an individual personal development proposal.
How to Enter:	Brochures are sent to every school principal in the eligible areas. If you cannot locate the brochure, request an application from the office listed below.
Awards Given:	Each winning team receives a school enrichment grant of $7,000 from GTE to be used for a school project. Each member of a winning team receives a personal development grant of $2,500 to engage in an educational activity that the teacher believes will stimulate his or her professional growth, eventually affecting achievement in the classroom.
Sponsors:	GIFT is sponsored and funded by the GTE Foundation on behalf of GTE Corporation and its domestic subsidiaries.
Contact:	Pat Etienne General Telephone of California One GTE Place Thousand Oaks, CA 91362-3811 (800) 251-4261 (805) 372-6640

Title:	**Industry Initiatives for Science and Mathematics Education**
Entry Deadline:	Applicants' materials must be submitted by mid-February.
Who Is Eligible?	Mathematics and science teachers may apply who have two or more years of experience at grades 9-12 in these seven counties: Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Santa Cruz.
Program Description:	During the summer, teachers work in meaningful industry jobs to gain firsthand knowledge of emerging technologies and to experience how the subject matter that they teach applies to a working environment. Teachers gain hands-on experience and knowledge about careers, company resources, educational opportunities, and state-of-the-art developments in technology. In the summer and throughout the school year, the Lawrence Hall of Science provides activities for teachers which encourage innovative interpretations and translations of the summer experience in the classroom to make mathematics and science more exciting, relevant, and valuable for students.
How to Enter:	Applications and more information about Industry Initiatives for Science and Mathematics Education (IISME) are available from either of the contacts listed below.
Benefits:	Teachers are paid $600 per week for eight weeks and establish networks of individuals who continue to provide assistance and encouragement in science activities.
Sponsors:	Thirty-five corporations were involved in 1985; and the figure continues to grow, enabling the program to increase the numbers of participating teachers.
Contact:	Kaye Storm IISME Program Director c/o Lockheed 0/90-01,B-253 3251 Hanover St. Palo Alto, CA 94304-1191 (415) 424-3311 or (415) 326-4800
	Gerri Ginsburg IISME Coordinator Education Research and Development Lawrence Hall of Science University of California Berkeley, CA 94720 (415) 326-4800

Title: **National Science Foundation Grant Program**

Who Is Eligible? Mathematics and science teachers in precollege programs are eligible.

Program Description: The National Science Foundation (NSF) funds programs which provide teachers of K-12 students with opportunities to enrich and increase their science and mathematics knowledge. These programs are offered to teachers through various institutions around the state. All are considered to be model projects with the potential for adaptation and adoption in other settings. Concrete plans exist for building long-term relationships between the staff and the participating teachers and for promoting the formation of partnerships among teachers and administrators of all levels and with other educational and community agencies and resources.

NSF-funded projects for teachers of K-12 students fall in these two categories:

1. Leadership activities. For teachers with strong mathematics and science backgrounds who may become leaders among their colleagues

2. Local/regional teacher development. For teachers who wish to update and deepen their science and mathematics knowledge and/or teaching methodology

Each year a directory for precollege science and engineering programs is published. Write for it in care of the address given below. The number of the catalog of *Federal Domestic Assistance* is 47.063, Precollege Science and Mathematics Education.

How to Enter: The Foundation encourages educators to submit a proposal to NSF for partial support. Write for the appropriate program announcements:

- 85-9 Division of Teacher Enhancement and Informal Science Education

- 85-10 Division of Materials Development and Research

Send a self-addressed mailing label for each specified program announcement to the address given below.

Contact: Directorate for Science and Engineering Education
National Science Foundation
Washington, DC 20550

Title:	**Presidential Awards for Excellence in Science and Mathematics Teaching—National Science Foundation**
Entry Deadline:	Nominations are usually due early in March. Nominees then receive nomination packets, which are to be completed and returned within a given length of time.
Who Is Eligible?	Science and mathematics teachers of grades 7-12 who have at least five years teaching experience in mathematics or science may apply. (California elementary teachers [levels K-6] may apply for the California Award for Excellence in Elementary Mathematics Teaching.)
Program Description:	The Presidential Awards program was established in 1983 by the National Science Foundation to identify outstanding middle school, junior high school, and high school teachers of science and mathematics who can serve as models for their colleagues. The goal of the program is to increase rewards and status for demonstrated professionalism, encouraging high-quality teachers to enter and remain in this field. The Elementary Mathematics Award honors three outstanding elementary teachers who emphasize understanding mathematics as described in the state framework and curriculum guide. The application is similar to the one used by secondary level teachers in the Presidential Awards program.
Awards:	Finalists receive an expense-paid trip to Washington, D.C., to be honored at an awards ceremony and receive a presidential citation as well as gifts and prizes from contributors from the private sector. The teacher's school is awarded a $7,500 grant from the National Science Foundation to be spent under the teacher's direction to supplement existing science or mathematics programs over a two-year period. An honors workshop allows the award winners to share their expertise with fellow awardees and national policymakers. Three elementary awardees are selected to receive an all-expenses-paid section conference of the California Mathematics Council and a $500 grant to use for the purchase of classroom mathematics materials.
Sponsors:	The National Science Foundation administers the program for the White House. The National Science Teachers Association is the primary contractor, coordinating with the National Council of Teachers of Mathematics and the Council of State Science Supervisors. Other support is given through the American Association of Physics Teachers, the American Chemical Society, National Association of Biology Teachers, the National Association of Geology Teachers, the National Academy of Sciences, and the American Association for the Advancement of Science.
Contact:	Thomas P. Sachse Mathematics and Science Education Unit California State Department of Education 721 Capitol Mall Mailing address: P. O. Box 944272 Sacramento, CA 94244-2720 (916) 324-7187

Title:	**The Teacher Achievement Award Program**
Entry Deadline:	Applicants' materials must be submitted by mid-February.
Who Is Eligible?	Full-time public and private secondary school (grades 7-12) mathematics and science teachers in California are eligible. Applicants must have a bachelor's degree and teaching certificate, must have taught full-time in grades 7-12 in the same school or school district for three years, must teach in the same school or school district during the next school year, and must receive a commitment of $2,500 in matching funds from their schools or school districts.
Program Description:	The Teacher Achievement Award Program (TAAP) provides opportunities for mathematics and science enhancement projects in grades 7-12 and for the professional development of teachers in these grades. Through TAAP and its network of professional mathematicians and scientists in institutions of higher education and in business and industry, teachers receive assistance in the design, development, and implementation of innovative and creative ideas for enriching the mathematics and science programs in their classrooms or schools. TAAP provides seed money for implementation of the school enhancement plan. TAAP also provides each teacher with an opportunity to study at a university of his or her choice and to engage in scientific research at a scientific laboratory. Teachers may receive support to attend professional meetings and conferences and to visit science centers, libraries, media centers, or other sources of professional growth.
How to Enter:	Teachers should request an application from the office listed below and return five copies of the completed forms to the same address. A phone number is listed for requesting an application or for assistance.
Awards Given:	For implementation of the school enhancement plan, each of the five teachers selected for an award will receive $2,500 (an amount which must be matched by the school, the school district, or other source) and an additional $2,500 for professional development activities. (No matching funds are required for this second amount.)
Sponsors:	TAAP is sponsored and funded by the California State University Foundation, which is supported by many private sources.
Contact:	Francis P. Collea Office of the Chancellor The California State University 400 Golden Shore Long Beach, CA 90802-4275 (213) 590-5779

B. Staff Development and Professional Growth

Staff development is of great importance in mathematics education. This section of the guide offers information pertinent to professional growth opportunities such as workshops, NASA's teachers' resource room, as well as tours of research facilities. While this list is by no means complete, teachers should take advantage of these and other available resources.

Title:	**AIMS Foundation**
Locations:	Summer programs and other sessions are generally held on the Fresno Pacific College campus. Some sessions are held at Huntington Beach. Contact the individuals listed below regarding other sites which may be used.
Who Is Eligible?	Science, mathematics, and computer teachers from K-12 may apply.
Cost:	Preregistration with a deposit for the summer programs is required. The offerings are appropriate for the use of Education for Economic Security Act (PL 98-377) funds, minigrants, and similar funding. College credit is available. For more information please write or call Fresno Pacific College at the address given below.
Program Description:	Fresno Pacific College offers programs designed for elementary and secondary teachers, computer education teachers, curriculum coordinators, administrators, and teachers using computer software. In addition to graduate classes, in-service programs, and workshops held year-round, Fresno Pacific College presents summer programs, including the Festival of Mathematics, computer institutes, the Science Festival, Project AIMS (Activities that Integrate Mathematics and Science) workshops, and the Trainer of Teachers Program. Each program features excellent, highly motivating speakers; opportunities to interact with other interested teachers; and a wealth of challenging, innovative materials and activities ready for use in the classroom.
Sponsors:	Fresno Pacific College sponsors the programs. The AIMS Foundation administers Project AIMS. Schools are providing financial support for teachers to attend sessions through a variety of sources such as minigrants, PL 98-377 funds, and other resources.
Contacts:	For information contact: Arthur Wiebe or Judie Hillen Mathematics/Science Project Fresno Pacific College 1717 South Chestnut Avenue Fresno, CA 93702 (209) 453-2209 or (209) 251-7194 To order materials, write to: AIMS Education Foundation P. O. Box 7766 Fresno, CA 93747

Title: **Ames Research Center—National Aeronautics and Space Administration**

Location: The National Aeronautics and Space Administration (NASA) Ames Research Center is located at the Moffett Field U.S. Naval Air Station off U.S. Highway 101 near Mountain View in the San Francisco Bay Area.

Who Is Eligible? Services and programs are available for public and private elementary schools and secondary schools, colleges, and universities.

Cost: No cost is charged for services; however, schools are requested to cover the cost of materials, speakers' expenses, and so forth.

Program Description: The Ames Research Center offers the following programs and services:

- Teachers' workshops. One-hour instructional resources programs after school and fifteen-hour accredited programs are available. Teachers may be certified to use lunar rock samples in the classroom after attending a two-hour lunar science certification course. A one-week workshop for teachers and administrators is hosted each summer at the Ames Research Center.

- Teachers' resource room. In the teachers' resource room at Ames, teachers may view instructional aids and may request copies of videotapes, 35 mm slides, publications, audiocassettes, teachers' guides, and classroom activities. Teachers are asked to furnish 35 mm film and videotapes. Call the educational programs officer in your area or (415) 694-6077.

- Teachers on the NASA mailing list receive copies of new educational publications and a quarterly newsletter, *Notes to Educators*. To be on the list, you may send your name and address to the Educational Programs Office. On written request teachers may order instructional kits and NASA publications free of charge.

Sponsor: The Ames Research Center is a tax-supported federal government laboratory.

Contacts:

For information about services in northern California, contact:

Garth A. Hull
Educational Programs Officer
(415) 694-5543

For information about services in southern California, contact:

B. Michael Donahoe
Educational Programs Officer
(415) 694-5544

Both programs' officers are located at:

Educational Programs Office
NASA-Ames Research Center
Moffett Field, CA 94035

Title:	**California Mathematics Project**
Entry Deadline:	Applications are usually due in mid-March. The deadline may vary among the 15 locations.
Who Is Eligible?	Teachers of all grade levels (K-14) are eligible.
Program Description:	The California Mathematics Project was legislated and funded to improve instruction in mathematics at all levels. Local site programs provide the opportunity for experienced teachers to develop their own mathematics skills and problem-solving repertoire and to share ideas, strategies, and resources for teaching mathematics, especially approaches to nonroutine problems. The purpose of the project is to make mathematics learning accessible and desirable to all students, particularly to increase participation of females and minority students. Teachers apply to participate in one of 15 summer institutes. All institutes emphasize problem solving, and two of them also emphasize the use of computers in problem solving. At each site different criteria are used to select teachers. Some invite both elementary and high school teachers, and others invite high school only or elementary only. Activities continue throughout the school year, and instruction is provided on how to conduct in-service programs for other teachers.
How to Enter:	Obtain an application from the state college or university you wish to attend. (The list of sponsoring colleges and universities is on the following page.) Usually 25 to 30 teachers are selected for each institute.
Awards Given:	A $600 stipend is provided for a three- to five-week summer institute. University extension credit is available at most sites.
Sponsors:	California State University and the University of California sponsor this program. Two members of the CMP Advisory Committee represent the institutions named above. Other agencies represented on the Advisory Committee are the California Community Colleges, Association of Independent Colleges and Universities, California State Department of Education, California Postsecondary Education Commission, California Labor Federation (AFL-CIO), and Industry Education Council.
Contacts:	(See the following page.)

Names, Locations, and Directors of the
California Mathematics Project

Primary Contact: Phil Daro
Executive Director
California Mathematics Project
University of California, Berkeley
(415) 643-7318

Bay Area Mathematics Project (7-14)
University of California, Berkeley
Elizabeth Stage
(415) 642-3167

Central California Mathematics Project (K-12)
California State University, Stanislaus
Thomas Abram
(209) 667-3593

Central Coast Mathematics Project (K-12)
California Polytechnic State University,
San Luis Obispo
Alan Holz
(805) 546-2632

CSU Chico Mathematics Project (7-12)
California State University, Chico
Sharon Ross (916) 895-4322
William Fisher (916) 895-6895
(916) 895-6111 (messages)

CSUDH Mathematics Project (K-8)
California State University, Dominguez Hills
Eunice Krinsky
(213) 516-3363 or 3378

Inland Area Mathematics Project (K-12)
University of California, Riverside
Pamela S. Clute
(714) 787-5228 (Education)
(714) 787-3113 (Mathematics)

Mathematics Master Teacher Project (K-12)
University of California, Irvine
Larry Chrystal
(714) 856-7463

Minority Schools Mathematics Project (9-12)
California State University, Los Angeles
Grant Fraser
(213) 224-2850 or 3287

Monterey Bay Area Mathematics Project (K-12)
University of California, Santa Cruz
Ed Landesman
(408) 429-2423 or 2085

Northern California Mathematics Project (K-14)
University of California, Davis
California State University, Sacramento
Judith Kysh
(916) 752-8393

Redwood Area Mathematics Project (K-14)
Humboldt State University
Carolyn Simmons
Roy Ryden
(707) 826-3766 or 3143

San Diego Mathematics Project (K-12)
San Diego State University
Nicholas Branca
(619) 594-4975 or 5090

San Francisco Mathematics Leadership
Project (K-8)
San Francisco State University
Carol Langbort
(415) 469-2292 or 1562

Tri-County Mathematics Project (K-14)
University of California, Santa Barbara
Julian Weissglass
Richard Shiers
(805) 961-3355

UCLA Mathematics Project (9-12)
University of California, Los Angeles
Susie Hakansson
(213) 825-1112

Title:	**Education for Economic Security Act--Title II** (Also called the Dwight D. Eisenhower Mathematics and Science Act)
Entry Deadline:	Applications are sent to schools in the fall, and a due date is announced at that time.
Who Is Eligible?	All public school districts are eligible for funds to provide staff development for teachers of mathematics and/or science.
Program Description:	Districts plan staff development opportunities in mathematics or science for K-12 staff members. The amount of the entitlement depends on the number of public and nonpublic K-12 students enrolled in the school district and on the Aid to Families with Dependent Children (AFDC) count in the attendance area.
How To Enter:	School districts apply to the Mathematics and Science Edcuation Unit of the California State Department of Education for funds to which they are entitled.
Sponsor:	Funds are distributed to states by the U. S. Department of Education.
Contact:	Gayland Jordan Mathematics and Science Education Unit California State Department of Education 721 Capitol Mall Mailing address: P. O. Box 944272 Sacramento, CA 94244-2720 (916) 324-7188

Title:	**EQUALS**
Locations:	EQUALS leadership institutes and training sessions are conducted in Berkeley at the Lawrence Hall of Science (LHS) located in the hills above the University of California, Berkeley; workshops may be arranged at locations around the state. Please call the LHS for further information.
Who Is Eligible?	Teachers of all levels and all interested individuals are eligible.
Cost:	Generally, workshops are provided at no cost, and materials are provided at cost. Please contact the Lawrence Hall of Science for details.
Program Description:	EQUALS is a mathematics in-service training program for teachers, counselors, and administrators serving students in levels K-12. The program is designed to provide special help in motivating young women and minority students to continue the study of mathematics. The Lawrence Hall of Science is a multipurpose educational facility whose hands-on exploratory models and displays draw community and school groups and the general public. Educators may attend informational workshops and in-depth seminars on projects developed by LHS staff members.
How to Enter:	Contact the EQUALS office at the address and phone number listed below.
Sponsors:	The LHS cooperates with industry, private foundations, the University of California, and other learning centers and institutions to develop its program exhibits and projects.
Contact:	EQUALS Lawrence Hall of Science University of California Berkeley, CA 94720 (415) 642-1823

Title:	**The Exploratorium**
Public Hours:	The museum is closed on Mondays and Tuesdays. Fall, winter, and spring hours are: Wednesday, 1 p.m. to 9:30 p.m. Thursday and Friday, 1 p.m. to 5 p.m. Saturday and Sunday, 10 a.m. to 5 p.m. The summer hours are: Wednesday, 11 a.m. to 9:30 p.m. Thursday and Friday, 11 a.m. to 5 p.m. Saturday and Sunday, 10 a.m. to 5 p.m.
Admission:	Admission is free for persons 17 years or younger, $2 for seniors and organized groups, and $4 for adults (any ticket is good for six months). Members are admitted free. Ample parking is available, and wheelchair access is provided.
Program Description:	The Exploratorium is a museum for people of all ages and all levels of scientific understanding. Visitors can enjoy the natural phenomena that have been discovered by scientists or observed by artists. Children can use exhibits to demonstrate concepts to their parents or vice versa. The Exploratorium staff recognizes the challenges, needs, and problems teachers face in providing motivating activities for their students. The Exploratorium is a significant resource for teachers' enrichment, providing a rich environment in which teachers may share current information, models, philosophies, and teaching goals with their colleagues and the Exploratorium's teaching staff. In addition to field trips where students and teachers may explore science and art exhibits, the Exploratorium offers teachers' institutes on weekends, after school, and during the summer; sessions for presenting papers; *Wavelength*, the newsletter of the Exploratorium teachers' institutes; and a selection of publications and teaching materials.
Location:	The Exploratorium is located in the Palace of Fine Arts, close to Golden Gate Park, and across from the San Francisco Marina.
Sponsors:	The Exploratorium has been funded by government agencies (for example, the city of San Francisco provides the space rent free and contributes about 6 percent of the annual budget). Private foundations, individual gifts, corporations, store income, and memberships are other sources of funds. Donations are always welcome.
Contact:	Lynn Rankin (elementary schools) Christina Orth (middle schools, junior high schools, and high schools) The Exploratorium 3601 Lyon Street San Francisco, CA 94123 (415) 563-7337

Title:	**Family Math**
Locations:	Family Math programs are conducted in Berkeley at the Lawrence Hall of Science (LHS), located in the hills above the University of California, Berkeley. Please call the LHS for further information.
Who Is Eligible?	Teachers of all levels, parents, and all interested individuals who want to learn how to establish and conduct a six-week Family Math course for K-8 parents and children are eligible.
Cost:	A fee is charged for the Family Math programs, which include all materials at no extra cost.
Program Description:	Family Math is a mathematics in-service training program for teachers, parents, administrators, and anyone serving students in levels K-12. Special materials and take-home activities are provided to motivate and encourage parent and child interaction and enjoyment of mathematics.
How to Enter:	For an application contact the LHS office at the address and phone number listed below.
Sponsors:	The LHS cooperates with industry, private foundations, the University of California, and other learning centers and institutions to develop its program exhibits and projects.
Contact:	FAMILY MATH Lawrence Hall of Science University of California Berkeley, CA 94720 (415) 642-1823

Title:	**Lawrence Livermore National Laboratory**
Location:	Most programs are held at the Science Education Center in the Lawrence Livermore National Laboratory (LLNL). For information concerning workshops on and off the facility, contact the persons listed on the following page.
Who Is Eligible?	Teachers of grades 1-12 are eligible. The center is available to San Francisco Bay Area teachers who wish to improve their knowledge of mathematics and science education. Your school may be eligible to receive help, because some services are available for teachers in schools located at distances exceeding 100 miles from the laboratory.
Cost:	Information regarding costs may be obtained from the laboratory.
Program Description:	Since its opening in 1984, the LLNL Science Education Center (SEC) has served as a major resource center, sharing laboratory expertise in science, mathematics, and computers with students and teachers. The SEC has a miniauditorium for demonstrations, lectures, and films; an experiment corner for hands-on scientific experiments; a resource library; and a dozen microcomputers. SEC programs include the following: 1. Computer education programs offer classes, workshops, and self-guided tutorials on LOGO, PLATO, BASIC, typing, and word processing for students, teachers, and other school personnel. 2. The guest speaker series provides a wide range of topics tailored to the needs of the audience, providing current and relevant information about LLNL and applied mathematics topics. 3. The *Science Education Center Report* is a monthly newsletter sent to teachers and students on SEC activities.
Sponsors:	The Lawrence Livermore National Laboratory is operated by the University of California for the U. S. Department of Energy.
Contacts:	Hector Timourian Director of Science Programs P. O. Box 808, L-793 Livermore, CA 94550 (415) 423-0556 Stephen Sesko Associate Administrator P. O. Box 808, L-793 Livermore, CA 94550 (415) 423-0556

Title: **Project T.I.M.E.—Teachers Improving Mathematics Education**

Location: The project is conducted in the following school districts:

Fillmore Unified School District
Goleta Union Elementary School District
Lompoc Unified School District
Oxnard Elementary School District
Ventura Unified School District

Project Description: Through this staff development program, teachers discover that mathematics is more than a collection of facts to be memorized; they explore and invent mathematics as they participate in planned activities. These activities help build the expectation that all students should learn, enjoy, and use mathematics. These elements of the *Mathematics Framework for California Public Schools* are emphasized: using manipulative materials, teaching for understanding, respecting children's thinking, providing for free exploration, broadening the curriculum, and using process skills.

Teachers participate in all-day, monthly in-service training sessions; weekly support group meetings; classroom demonstration lessons; and coaching activities.

Each school has a teaching specialist with no classroom duties who conducts the in-service training and support group meetings and visits classrooms to demonstrate the use of manipulatives with students. Teachers are encouraged to extend these activities with their students, including the use of cooperative groups and student self-direction.

Materials Used: Pattern blocks, inch tiles, grid paper, milk cartons, dot stickers, cubes, water color markers, play money, calculators, real coins, dice, overhead projectors, measurement tools, Cuisenaire rods, hinged mirrors, crayons, and colored pencils are the materials used.

Evaluation Comments: Assessment focuses on changes in teachers' behaviors and perspectives (not on student outcomes) through surveys of teachers' instruction, beliefs, and practices; interviews with teaching specialists; structured observations of classroom teaching; and interviews and surveys of participating administrators and community members, including parents, to determine effectiveness of community outreach.

Contact: Judith E. Mumme, Director
Project T.I.M.E., Mathematics Department
University of California
Santa Barbara, CA 93106
(805) 961-3190

Title: **Technology in the Curriculum—Mathematics Resource Guide**

Who Is Eligible? Teachers from levels K-12 are eligible.

Cost: Sets of the Technology in the Curriculum (TIC) projects were provided to every public school in California in 1986. Additional materials and updates were produced in 1987. Complete sets, including the 1987 materials, are available for $150, plus sales tax. A single volume, *Technology in the Curriculum Resource Guide 1988*, which was updated in 1988, is available for $3.50 plus sales tax. Contact the Bureau of Publications Sales, California State Department of Education, listed below.

Program Description: The *Mathematics Resource Guide* provides a wealth of resources which can help teachers improve mathematics education through the use of computers and instructional videos. The guide organizes information about computer and video programs which were available at the time of publication and keys each program to the *Mathematics Framework for California Public Schools*, which was published in 1985. Sample units with lesson plans are included for grade levels K-3, 3-6, 6-9, and 9-12.

The TIC package consists of these resource guides: mathematics, science, history-social science, English-language arts, foreign languages, and visual and performing arts. Data disks correlating to the guides and documentation for *DataRelator*, the data base management system for the project, are also included.

Sponsors: The resource guide was prepared under a grant from the California State Department of Education by the staff of the Mathematics Technology in the Curriculum Project, a joint project of the EQUALS Program and the Math and Computer Education Project at the Lawrence Hall of Science, University of California, Berkeley. Software vendors and instructional video distributors provided review materials. The Berkeley Unified School District and the Berkeley School of Education at the University of California lent support and equipment.

Contact: To purchase additional sets of TIC materials, contact:

Bureau of Publications Sales
California State Department of Education
P.O. Box 271
Sacramento, CA 95802-0271
(916) 445-1261

C. Professional Affiliations

The professional affiliations listed in this guide are endorsed by the Mathematics and Science Education Unit of the California State Department of Education as an excellent means for teachers to enrich and enhance their professional and personal lives. Teachers are encouraged to obtain membership in associations at the local, regional, national, and international levels, which may offer support and encouragement for each individual's areas of expertise and interest in mathematics.

Title:	**American Mathematical Society**
Who Is Eligible?	Membership is open to anyone.
Program Description:	The American Mathematical Society (AMS) is a nonprofit organization devoted to promoting the interests of mathematical scholarship and research. Through their membership in the Society, mathematicians throughout the country and the world maintain contact with each other and keep abreast of the latest progress in mathematics. Two national and eight sectional meetings are normally held each year. These general meetings provide opportunities to announce and discuss new research and enable mathematicians to obtain immediate recognition for their work. Meetings are widely distributed geographically so that members can attend at least one a year without excessive travel. Some of the ways the Society benefits its members are the following: ° Sponsoring meetings, symposia, seminars, and institutes with reduced registration fees for members ° Providing employment services ° Publishing mathematical books and journals and allowing a 40 percent discount on almost all publications ° Disseminating information through free subscription to *Notices of the AMS* and the *Bulletin of the AMS* ° Serving the mathematical community through support for young mathematicians, coordination of government grants, keeping government aware of concerns to mathematicians, and providing data and resource information and files
Costs:	Ordinary and joint family membership dues are $88 for persons with an annual professional income of $30,000 or more; otherwise, membership costs $66. For additional information about membership fees, write to the address listed below.
How to Enter:	Write to the address given below for a membership application.
Contact:	American Mathematical Society P.O. Box 6248 Providence, RI 02940 (401) 272-9500 (800) 556-7774

Title:	**California Mathematics Council**
Who Is Eligible?	Any adult interested in mathematics education, especially teachers in elementary schools, middle schools, junior high schools, senior high schools, community colleges, colleges, and universities are encouraged to participate.
Program Description:	CMC is a professional organization of over 5,000 teachers, administrators, prospective teachers, and others interested in mathematics education. CMC has three regional suborganizations (northern, central, and southern) which coordinate activities for CMC members in each part of California. Each CMC section presents a conference for teachers of mathematics each fall, makes awards to outstanding teachers and students, and provides an information network about activities of interest to teachers of mathematics. The CMC *ComMuniCator* is a quarterly publication with useful teaching suggestions for all levels. CMC is an affiliate of the National Council of Teachers of Mathematics (NCTM).
How to Enter:	Request a membership form from: CMC P.O. Box 6833 Laguna Niguel, CA 92677
Contacts:	For information about CMC and its activity affiliate organizations for teachers of mathematics at the local level in many California cities, write: Elizabeth Stage, CMC President for 1988 and 1989 1247 Alvarado Berkeley, CA 94705 Tony Spears, CMC President for 1990 and 1991 Office of the Fresno County Superintendent of Schools 2314 Mariposa Street Fresno, CA 93721

Title:	**Mathematical Association of America**
Who Is Eligible?	Anyone may apply for membership.
Program Description:	The Mathematical Association of America (MAA) is a nonprofit organization devoted to mathematics, particularly at the collegiate level. The MAA promotes exchange of ideas on mathematics and teaching through its newsletter and three journals, which are available to members at greatly reduced prices. The MAA has 28 regional affiliate sections, which hold meetings so that all members can attend at least one each year without excessive travel. National meetings are held at different locations from year to year for the convenience of the members. The MAA is concerned both with mathematics and with its teaching. MAA officers and staff strive to eliminate the barriers that exist in the mathematics community. The MAA encourages and creates communication among the groups represented in its membership: nearly 14,000 college-level members; 3,000 high school teachers; 3,000 business, industry, and government members; and 4,500 student members. MAA journals, particularly its newsletter, *Focus*, and the *College Mathematics Journal* cover news of educational trends and controversies, as well as mathematical research developments.
Costs:	Regular membership, which includes *Focus* and the *Mathematics Magazine*, costs $45 per year; student membership dues are $23; and new members receive a $10 discount for each of the first two years of membership. For additional information about membership fees write to the address listed below.
How to Enter:	Write to the address listed below for a membership application.
Contact:	Mathematical Association of America 1529 Eighteenth Street, N.W. Washington, DC 20036 (202) 387-5200

Title: **National Council of Teachers of Mathematics (NCTM)**

Who Is Eligible? Any adult interested in mathematics education may join this particularly valuable professional organization for teachers of mathematics.

Program Description: NCTM and its 200 affiliated organizations form an international network offering periodicals, educational materials, seminars, and conventions that help members sharpen their teaching skills, learn the most up-to-date classroom techniques, and increase students' motivation. This organization targets mathematics education in terms of improving methods of instruction and discussing and researching problems and trends.

Of particular interest are two monthly (September through May) periodicals:

- The *Arithmetic Teacher* is for elementary teachers and mathematics educators. It regularly features reproducible classroom materials and creative and practical teaching ideas.
- The *Mathematics Teacher* is for mathematics instructors in secondary and two-year colleges. Oriented toward upper-level high school mathematics, the journal has a variety of articles on mathematics research and practical ideas for teaching more effectively. Computer education articles and courseware reviews are included in both periodicals.

How to Enter: Annual dues of $35 include one of the journals. A second journal costs $13 more.

Contacts: There usually is a membership table for new applicants at mathematics conferences. For more information or a membership form, call or write:

NCTM
1906 Association Drive
Reston, VA 22091
(703) 620-9840

Mathematics and Science Education Unit
California State Department of Education
721 Capitol Mall
Mailing address:
P. O. Box 944272
Sacramento, CA 94244-2720
(916) 323-6151

D. Search for Excellence in Mathematics Education

Since 1986 the California State Department of Education has promoted a search for outstanding school-level mathematics programs in K-12 schools in the state. Schools nominated as having an exemplary program in a particular area of mathematics education receive an application. The applications are reviewed by a team of mathematics educators who select the most interesting programs and make an on-site visit.

The schools identified in this section are judged to have programs that may be used as models for other schools where staff are committed to improving their mathematics programs.

Prototypes of Math A

The descriptions that follow exemplify programs that enliven the mathematics curriculum offered to students in the middle two quartiles of mathematical ability at the high school level. According to the *Mathematics Framework for California Public Schools*, a mathematics course should be offered to students who have successfully completed the recommended grade 8 mathematics course but are not prepared for an academically rigorous college preparatory course.[1] The course, called Math A, is the first in a two-year sequence that presents the mathematical concepts and skills that are fundamental in our technological society.

Math A includes some algebra, geometry, and statistics and probability, concepts from which are usually found only in the college preparatory sequence. This course also extends the other strands of the K-8 mathematics program: number, measurement, patterns and functions, and logic. Math A, together with the second course in the sequence, Math B, should incorporate concepts and skills, problem solving, and applications as described in the *Model Curriculum Standards, Grades Nine Through Twelve*.[2]

The instructional approach in Math A should be more concrete and less abstract than that for the college preparatory courses. The course should emphasize applications and practical use of all mathematics strands. If possible, instructional presentations should not depend on students' total mastery of previous material. Some problem situations should contain realistic, noncontrived numbers for which the use of calculators is preferable. Students should be challenged with suggestions for mathematical projects that apply concepts from two or more strands.

Because the recommendations for Math A had been available for a relatively short time, programs were nominated that were in preliminary or transitional form. Many schools and school districts have begun development of Math A or Math B courses with information gleaned from workshops, conferences, and word-of-mouth. The persons listed below have been particularly helpful in developing Math A and Math B and may be contacted for further information:

Clyde Corcoran
11733 East Beverly Drive
Whittier, CA 90601
(213) 695-1424

Tom Lester
Mathematics and Science
Education Unit
State Department of Education
721 Capitol Mall
Mailing Address:
P. O. Box 944272
Sacramento, CA 94244-2720
(916) 367-0066

[1] *Mathematics Framework for California Public Schools, Kindergarten Through Grade Twelve*. Sacramento: California State Department of Education, 1985.

[2] *Model Curriculum Standards: Grades Nine Through Twelve, Mathematics*. Sacramento: California State Department of Education, 1985.

Title:	**Math A—Fresno Unified School District**
Location:	Math A is offered at Fresno High School and Sequoia Freshman High School, both of which are in the Fresno Unified School District.
Project Description:	Math A, an activity-oriented high school mathematics course for students in the middle range of ability, is based on the *Mathematics Framework for California Public Schools* and the guidelines of the *Model Curriculum Standards, Grades Nine Through Twelve.* This program offers a practical, concrete approach to strands of mathematics. Much of the content covers topics in introductory algebra and geometry, so that some students may make the transition to the college-preparatory sequence. Teachers use a variety of instructional strategies. Students engage in cooperative learning situations using manipulative materials. Lessons frequently involve the use of empty jars, string, homemade alidades or transits, calculators, algebra tiles, number chips, dice, measuring tapes, meter sticks, or grid paper. Classroom sets of calculators are provided, and computational skills are reinforced in the context of applications. Problem-solving opportunities are diverse; in many instances, there is no single correct answer.
Unique Features:	Teacher in-service training in the summer is provided in all mathematics strands. Teachers from eight high schools participate and are interviewed during the school year. Skill review takes place in activity-type lessons that integrate concepts and strands.
Evaluation Comments:	Criterion-referenced tests are used for ongoing and final evaluation. Attitude surveys are used with teachers and students; *California Achievement Test (CAT)* and California Assessment Program (CAP) scores are used for formative data. The *Orleans-Hannah Algebra Prognosis Test* is used to indicate whether or not students are ready for college preparatory algebra.
Contact:	Linda Dritsas, Secondary Mathematics Coordinator Fresno Unified School District, Education Center Tulare and M Streets Fresno, CA 93721 (209) 441-3642

Title:	**Math A—San Juan Unified School District**
Location:	Math A is offered at high schools in the San Juan Unified School District and elsewhere in the greater Sacramento area.
Project Description:	Staff from a broad group of secondary school teachers from the greater Sacramento area and the Northern California Mathematics Project, at the University of California, Davis, have combined their interest in Math A to create or locate curriculum materials appropriate for this subject. The goal is to encourage students to study mathematics and extend their understanding of its concepts. This project is creating teachers who see the importance of a broad-based mathematics course for middle ability students. At least 40 classrooms will be using Math A materials. Present emphasis is in obtaining appropriate curriculum materials; trying them out in class; and revising, enhancing, or discarding them. All seven of the mathematics strands are receiving attention. Within the context of the subject matter, a variety of manipulatives are suggested, such as paper folding and the use of a crude compass, measuring devices, marbles, and beans.
Evaluation Comments:	No in-class evaluation has been developed yet. Teacher and student attitude inventories will be used to look at the effects of the change in approach to general mathematics.
Contact:	Judy Kysh Northern California Mathematics Project University of California, Davis Davis, CA 95616 (916) 752-8393 Sylvia Huffman, Mentor Teacher, Math A San Juan Unified School District 3738 Walnut Avenue Carmichael, CA 95822 (916) 971-7136

Title:	**Math A—Trabuco Hills High School**
Location:	Math A is offered at Trabuco Hills High School, Mission Viejo, in Orange County.
Project Description:	This project is the first course of a two-year sequence that presents the fundamental mathematics concepts and skills required in a technological society. A concrete approach to understanding concepts is used. Content areas are measurement, geometry, statistics and probability, logic, and topics in algebra. All students are expected to achieve minimum competency in each area. Teaching for understanding is a key element of instruction. Adequate time for problem solving is provided because students, not the teacher, must focus on thinking, making decisions, and developing skills in solving problems. The primary text is *Mathematics: A Human Endeavor.*[1]
Unique Features:	Regular classroom instruction includes use of overhead projectors, filmstrips, manipulatives, computer lessons, and cooperative learning groups. Students complete "level" packets outside class. The self-correcting packets are collected on Fridays, when quizzes are given. Results of a quiz determine a student's capacity to advance. Mastery of skills is expected; therefore, remediation is provided for the slower students.
Concrete Materials Used:	The materials used are paper clips, folding paper, dice, markers, construction paper, multilink cubes, boxes, marbles, chips, balance pans, algebra tiles, Sage kits, solids, conic sections, mirrors, logic puzzles, string, and yarn.
Evaluation Comments:	Before enrollment in the program, students received D's or F's in mathematics, primarily because of attitude problems. After taking Math A, over 70 percent of the same students are earning C's or better.
Contact:	Rowena Hacker Trabuco Hills High School 27501 Cordova Road Mission Viejo, CA 92691 (714) 768-1934

[1]Jacobs, Harold, *Mathematics: A Human Endeavor, A Book for Those Who Think They Don't Like the Subject.* New York: W. H. Freeman and Company, 1982.

Manipulatives in Grades 4-6

The use of manipulatives in levels K-3 is commonplace. Less frequent is the continued use of concrete materials in later grades. Most learners, including some adults who can function well at the abstract level, profit from the use of concrete materials when a new concept or a difficult problem is encountered. Concrete materials provide a way for students to connect their understanding about real objects and their own experiences to mathematical concepts.

Although there are teachers at all grade levels who use concrete materials, it is equally important to recognize that students must make the connection between their real world experiences and the symbolic representation of a concept. Most students require teachers' guidance to transfer learning from concrete to abstract.

Because many teachers may individually implement the recommendations of the *Mathematics Framework for California Public Schools* for using manipulatives in their classrooms, this search focuses on identifying places where there are schoolwide efforts in this area. Also, this search focuses on grades 4-6 only. Other grades may be addressed later.

Title:	**Explorations of Mathematics**
Location:	This program is offered at Harbor Mathematics/Science Magnet School, San Pedro, in the Los Angeles Unified School District.
Program Description:	Since September 1985, Mary Laycock, prominent mathematics educator, has provided monthly in-service training for teachers to learn to use manipulatives in teaching concepts. Teachers meet weekly to plan, discuss, and share experiences. Peer coaching has helped all teachers gain skill in using concrete materials. Ms. Laycock also works with many parents in evening workshops.
Unique Features:	Concepts from art are used to demonstrate tessellations, rotations, symmetry, transformations, and proportion. In science classes, mathematics is integrated through graphing, measuring, predicting, hypothesizing, and weather calculating. In social studies, mathematics concepts help to explain time lines and scaling of murals and dioramas.
Concrete Materials Used:	Materials used are unit cubes, Unifix cubes, multilinks, multibased blocks, base ten blocks, fractions tiles, colored disks, dice, tangrams, beans, sticks, cylindrical containers, pattern blocks, attribute blocks, egg cartons, Cuisenaire rods, beakers, odd-shaped bottles, jars, metric measuring devices, geoboards, geoblocks, paper cups, and tiles.
Evaluation Comments:	Results from this program are that *Comprehensive Test of Basic Skills (CTBS)* scores rose to the 90th percentile and positive comments came from faculty and parents.
Contact:	Darline Dye Harbor Magnet School 1214 Park Western Place San Pedro, CA 90732

Title:	**Monte Vista Approach to Problem Solving (MAPS)**
Location:	This program is offered at Monte Vista Elementary School, Santa Ana, in the Santa Ana Unified School District.
Program Description:	Teachers in grades 4-5 use manipulatives to guide students through concepts, creating curiosity and experimentation. The children internalize the concrete presentation with the abstract, connecting the concept to real experience. Many students for whom English is a second language benefit from the teaching methods that isolate one concept and communicate ideas with concrete materials. Frequent testing enables teachers to note students' progress. Classes are divided into three groups: one gets direct instruction with manipulatives; an aide works with a second group, guiding practice; and a third group does independent work that will be discussed the next day. Other strands are explored one day a week.
Unique Features:	Total physical involvement with concrete materials allows teachers to reinforce vocabulary introduced in lessons for students for whom English is a second language and allows students to communicate with each other as they freely explore and experience the concepts. This practice reduces dependency on paper and pencil drill. This method carries over into science activities and other cooperative learning areas.
Concrete Materials Used:	Materials used are base ten blocks, Cuisenaire rods, multilinks, attribute blocks, teacher-made games and materials for presentation, menus from restaurants, measuring cups, scales, protractors, compasses, rulers, and graph paper.
Evaluation Comments:	Daily pretests and post-tests are used. Concept mastery is checked through homework and chapter tests. *California Achievement Test (CAT)* and *Comprehensive Tests of Basic Skills (CTBS)* scores will be compared with previous scores.
Contact:	Kathy Sabine, Assistant Principal Monte Vista Elementary School 2116 Monte Vista Santa Ana, CA 92704 (714) 558-5831

Title:	**Thinking with Mathematics**
Location:	This program is offered at Hoover Elementary School, Santa Ana, in the Santa Ana Unified School Distict.
Program Description:	Each week students in grades 1-5 are assigned one of three flexible groups according to need. During a three-day rotating program, each group receives 30 minutes of directed instruction using manipulatives, 30 minutes of follow-up book work using manipulatives, and 30 minutes of activity using manipulatives in problem-solving situations. On the fourth day the total class works in the book at group levels, with individualized help from the teacher. On the fifth day the whole class is involved in a problem-solving activity using various strategies and techniques as well as cooperative groups.
Unique Features:	The school population is 70 percent Spanish speaking; 75 percent are from single-parent homes, or both parents work outside the home. Teachers try to incorporate mathematics teaching into the total program. Small groups illuminate individual needs. Teachers are innovative and less dependent on textbook pages. Six Family Math workshops are held in English and Spanish during the school year.
Concrete Materials Used:	Materials used include Unifix cubes, pattern blocks, base ten blocks, beans, sticks, cups, and assorted materials.
Evaluation Comments:	Weekly tests are based on concepts covered. District expectancies in mathematics determine the concepts and pages of basal textbooks to be covered during the week. Annual *California Achievement Test (CAT), Comprehensive Tests of Basic Skills (CTBS)*, and district competency test scores are compared and summary reports are prepared.
Contact:	Ann McCann, Principal Hoover Elementary School 408 E. Santa Clara Avenue Santa Ana, CA 92706 (714) 558-5737

E. Programs and Projects

Many opportunities are available for mathematics teachers to enrich their curriculum with supplementary materials. This section lists a sampling of the many projects and programs available which show promise in benefiting teachers of mathematics.

Title:	**Mathematics/Science Nucleus**
Location:	The program is transferable for duplication at any school site. While most staff training is centered in the San Francisco Bay Area, workshops and in-service training may be requested at school sites outside this area, depending on the number of participants.
Who Is Eligible?	Any interested school may contact the Mathematics/Science Nucleus about its programs. Elementary schools with large enrollments of minority students are given priority.
Cost:	Please contact the Mathematics/Science Nucleus for details.
Program Description:	The Mathematics/Science Nucleus offers the I. Science Mate Program (Integrating Science, Mathematics, and Technology). This 34-week (one year) program for K-6 covers all areas of science using hands-on experiences. The Nucleus also offers in-service training, workshops, speakers, and science products to elementary schools. Proceeds from the sale of the science products go toward science centers at schools which adopt the program.
Sponsors:	The Mathematics/Science Nucleus is a nonprofit organization. The U.S. Geological Survey was instrumental in developing the program and the science laboratories, contributing materials and personnel.
Contact:	Angela V. Montez, Director Mathematics/Science Nucleus 3710 Yale Way Fremont, CA 94538 (415) 490-MATH

Title: **National Diffusion Network**

Locations: State facilitator centers are located in each state, Washington, D.C., Puerto Rico, and the Virgin Islands. Demonstration schools are located across the country. When a school adopts a program, the state facilitator arranges for the program's developer to provide in-service training at the adopting school site.

Who Is Eligible? Educational programs are available for schools, colleges, and other institutions, serving students preschool through adult.

Cost: All National Diffusion Network (NDN) services are provided at little or no cost to the schools which adopt the programs. Schools cover the cost of expenses for teacher training. Schools requiring financial assistance to adopt an NDN program should check with the state facilitator for possible funding sources.

Program Description: The National Diffusion Network supports the development, adoption, and implementation of exemplary educational programs throughout the United States. NDN exemplary programs in mathematics include:

Astra's Magic Math, level K *
Calculator Math, grades 7-9
CAMEL (Calculator Assisted Mathematics for Everyday Living), grades 9 and 10
CLASSMATE 88 Mathematics Computational Skills Program, grades 4-6
Competency-Based Program for Mathematics Mastery, grades 7 and 8
Comprehensive School Mathematics Program (CSMP), levels K-6 *
Computer-Assisted-Diagnostic-Prescriptive-Program in Reading and Math, grades 3-9 *
Conceptually Oriented Mathematics Program (COMP), grades 9-12
Cross-Age Structured Tutoring Program for Mathematics, grades 2-8
Diagnostic Prescriptive Arithmetic (DPA), grades 3-5 *
Diagnostic Prescriptive Individualized Mathematics (DPI), grades 7-9
First-Level Mathematics (KINDERMATH), levels K and 1 *
Go Metric: A Supplemental Low-Cost Metric Curriculum, grades 5-8
HOSTS MATH: Help One Student to Succeed, grades 2-6
Individualized Prescriptive Arithmetic Skills System (IPASS), grades 5-6 *
Mathematics Achievement Program (MAP), grades 2-5
MICRO/MATH (formerly Mathematics/Technology), grades 7 and 8 *
M2C: Math Motivational Centers, grade 9
STAMM: Systematic Teaching and Measuring Mathematics, levels K-8 *
Success Understanding Mathematics (SUM), grades 2-6 *
Team-Accelerated Instruction: Mathematics, grades 3-6 *
Team-Assisted Individualization: Mathematics, grades 3-6 *

* Projects currently funded by the NDN.

Title I Mathematics Computer-Assisted Instruction (CAI), grades 3-6
Project U-SAIL, grades 1-9 *
Utilizing the Computer in Teaching Secondary Mathematics, grades 9-12 *

A catalog of descriptions and information about NDN programs, *Educational Programs That Work*, is available for $8.50, including tax and shipping, from the following address:

Attention: Debra Kaiser
California Facilitator Project
c/o Association of California School Administrators
1575 Old Bayshore Highway
Burlingame, CA 94010

Sponsors:

The National Diffusion Network is federally funded through the U.S. Department of Education.

Contact:

Joyce Lazzeri
California Facilitator Project
c/o Association of California School Administrators
1575 Old Bayshore Highway
Burlingame, CA 94010
(415) 692-2956
1-800-672-3494

Title:	**Project AIMS—Activities That Integrate Mathematics and Science**
Locations:	The AIMS materials may be ordered through the AIMS Education Foundation. Workshops are conducted statewide and nationwide, as well as on the Fresno Pacific College campus. Contact the Mathematics and Science Project for further information.
Who Is Eligible?	Teachers at levels K-9 are eligible.
Cost:	The cost is approximately $10.95 per AIMS book. Workshops and vaious materials are available. For further information contact the individuals listed below.
Program Description:	The AIMS Foundation has developed a program integrating mathematics, science, social studies, and language arts in response to the national need and demand for upgrading science and mathematics education. Fresno Pacific College offers thorough training in the approach, content, and methodology of the AIMS materials, which include books for levels K-4 and 5-9, consisting of teachers' guides and students' work sheets; the science poster series and the mathematics poster series; Project SETUP (Software Evaluation and Teaching Utilities Project) books; the AIMS laboratories, the basic equipment needed for the AIMS investigations; and the *AIMS Newsletter*, a publication of the AIMS Education Foundation. In addition, the AIMS Foundation conducts an on-going process in which writing teams made up of educators develop lessons for new AIMS books.
Sponsors:	Fresno Pacific College, through a National Science Foundation grant, originally sponsored Project AIMS, offering graduate credit to teachers to serve on writing teams to develop the AIMS materials. The AIMS Foundation, a nonprofit organization, administers the project. Proceeds from the sale of the AIMS books provide scholarships for teachers and the continuing publication of new materials.
Contacts:	For information contact: Arthur Wiebe or Judith Hillen Mathematics/Science Project Fresno Pacific College 1717 Chestnut Avenue Fresno, CA 93702 (209) 453-2209 or 251-7194 To order materials write to: AIMS Education Foundation P. O. Box 7766 Fresno, CA 93747

Publications Available from the Department of Education

Over 650 are available from the California State Department of Education. Some of the more recent publications or those most widely used are the following:

ISBN	*Title (Date of publication)*	*Price*
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0-8011-0272-3	Administration of Maintenance and Operations in California School Districts (1986)	6.75
0-8011-0216-2	Bilingual-Crosscultural Teacher Aides: A Resource Guide (1984)	3.50
0-8011-0238-3	Boating the Right Way (1985)	4.00
0-8011-0275-8	California Dropouts: A Status Report (1986)	2.50
0-8011-0783-0	California Private School Directory, 1988-89 (1988)	14.00
0-8011-0748-2	California School Accounting Manual (1988)	8.00
0-8011-0715-6	California Women: Activities Guide, K—12 (1988)	3.50
0-8011-0488-2	Caught in the Middle: Educational Reform for Young Adolescents in California Public Schools (1987)	5.00
0-8011-0760-1	Celebrating the National Reading Initiative (1989)	6.75
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0-8011-0749-0	Educational Software Preview Guide, 1988-89 (1988)	2.00
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0-8011-0041-0	English–Language Arts Framework for California Public Schools (1987)	3.00
0-8011-0731-8	English–Language Arts Model Curriculum Guide, K—8 (1988)	3.00
0-8011-0786-5	Enrichment Opportunities Guide: A Resource for Teachers and Students in Math and Science (1989) (with binder)	8.75
0-8011-0801-2	Enrichment Opportunities Guide: A Resource for Teachers and Students in Math and Science (1989) (no binder)	5.75
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*The following editions are also available, at the same price: Armenian/English, Cambodian/English, Hmong/English, Japanese/English, Korean/English, Laotian/English, Pilipino/English, Spanish/English, and Vietnamese/English.

ISBN	*Title (Date of publication)*	*Price*
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A complete list of publications available from the Department, including apprenticeship instructional materials, may be obtained by writing to the address listed above or by calling (916) 445-1260.

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